Johns lle

JOHNS-MANVILLE
JM
PRODUCTS

RICHARD M. SMITH

BUILDING MATERIALS DEPARTMENT
JOHNS-MANVILLE

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NEW YORK, N. Y.
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Bonded BUILT-UP ROOFS

JOHNS-MANVILLE
JM
PRODUCTS

JOHNS-MANVILLE
COMPLETE BUILT-UP ROOF SERVICE

REALIZING that no one type of built-up roof can be acceptable or usable under all conditions, and recognizing the factor of individual preference, Johns-Manville has developed a number of different types of built-up roofs and is in a position to furnish a roof to meet practically any condition or personal preference.

The various standard J-M Built-Up Roofs are tabulated, and condensed specifications given on pages 10 and 11, with ratings of the Underwriters' Laboratories, Inc. The roofs are classified on the basis of quality, the kind and slope of deck, the type of felt, finish, etc. Detailed individual specifications begin on page 12.

SMOOTH-SURFACED ASBESTOS BUILT-UP ROOFS

While Johns-Manville furnishes built-up roofs of every type, the smooth-surfaced asbestos roof is recommended as the most generally adaptable for practically all conditions and a roof which will give virtually trouble-free protection for the life of the building.

J-M Smooth-surfaced Asbestos Built-up Roofs are the outcome of several decades of study and experience in producing durable, fireproof, weatherproof, lightweight roofs at a moderate cost. They are suitable for practically every type of industrial building, warehouse, office building, hotel, hospital and apartment house.

They are built up of alternating layers of asphalt-saturated asbestos felt and roofing asphalt.

J-M Asbestos Felts, with which J-M Bonded Asbestos Roofs are built up, will not support combustion even when impregnated and coated with asphalt. The Underwriters' Laboratories, Inc., give Class A ratings to many different types of J-M Asbestos Roofs. They are fire-resistant to the highest degree.

J-M Bonded Filled Roofing Asphalt—a relatively recent development in asphalt processing which has proved to be far superior to ordinary asphalts—is used on all J-M Bonded Asbestos Roofs. Tests at the Johns-Manville Research Laboratories at Manville, N. J., have demonstrated that the unusual ability of J-M Bonded Asphalt to stand up under all conditions of service will add years to the life of the roof.

OTHER TYPES OF J-M BONDED BUILT-UP ROOFS

In addition to Asbestos Roofs, Johns-Manville also supplies Combination Roofs, composed of a rag base felt and asbestos finishing felts, and a complete line of Slag or Gravel-surfaced Roofs for flat decks using tar-saturated asbestos or rag felts and coal tar pitch. These types of J-M Bonded Roofs are also included in the tables of condensed specifications.

BOND BY NATIONAL SURETY CORP.

All Johns-Manville Built-up Roofs, except on the Pacific Coast, will, when desired, be covered by a bond of National Surety Corp., guaranteeing the performance of the particular roof for a period of from ten to twenty years, depending on the type of roof applied. This bond is issued only on roofs laid by Johns-Manville Approved Roofing Contractors and in connection with Johns-Manville inspection service. The roof bond will not cover the roof insulation.

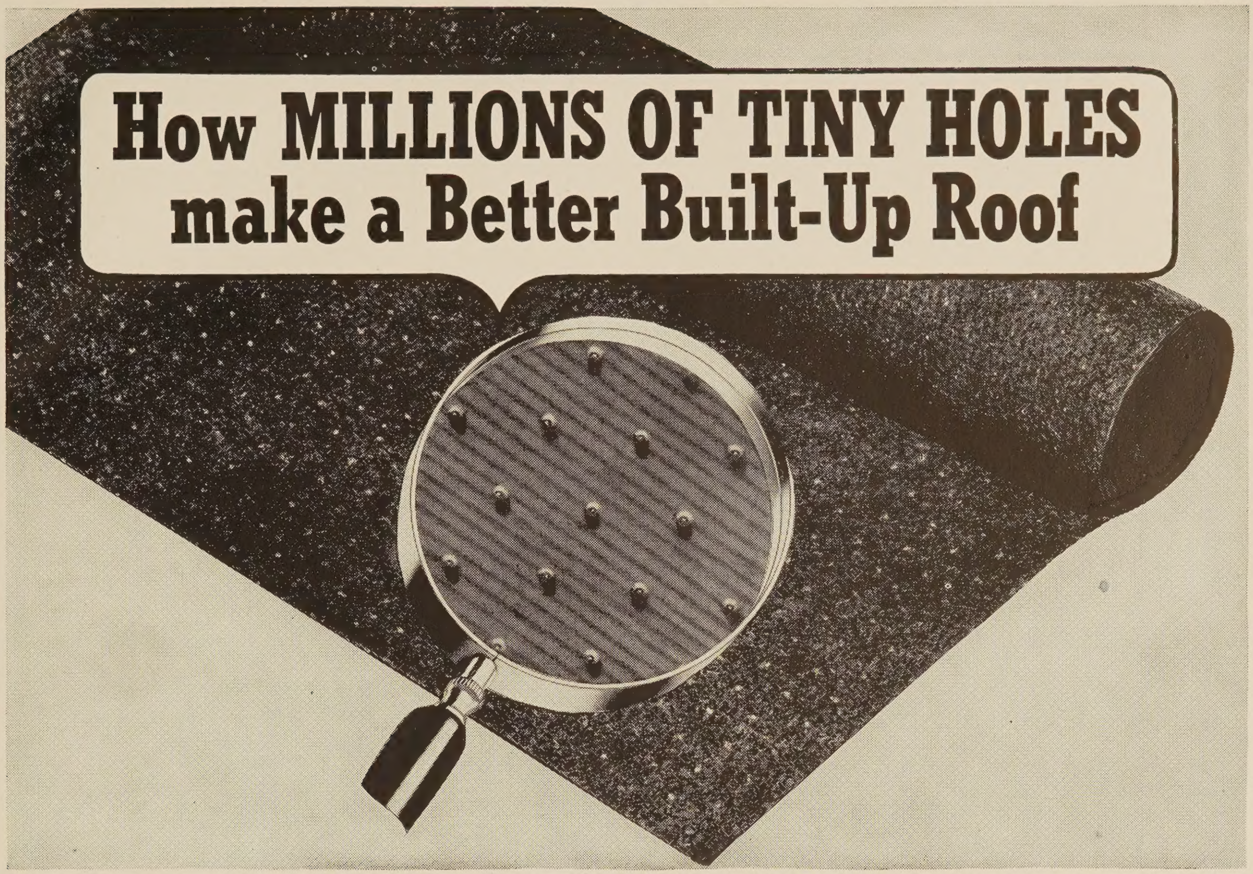
As the best results are obtained only when the proper roofing is correctly laid, Johns-Manville has appointed Approved Roofing Contractors throughout the country, whose appointments have been based upon experience, integrity and financial responsibility.

Johns-Manville maintains a corps of inspectors whose services are available in connection with bonded built-up roofs. This service is required in connection with every roof which is to be bonded, both before, during and after application.

Johns-Manville

22 East 40th St., New York, N. Y. JOHNS-MANVILLE JM PRODUCTS Offices in All Large Cities

How MILLIONS OF TINY HOLES make a Better Built-Up Roof



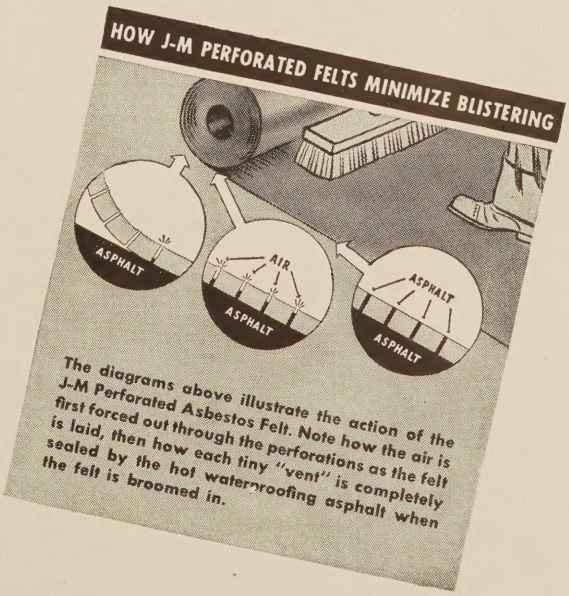
Presenting

THE NEW J-M *Perforated* ASBESTOS FELT

The announcement of this newly improved roofing felt should be of unusual interest to architects because it reduces to a minimum one of the most annoying problems encountered in built-up roofing construction. That problem is the formation of so-called "blisters" formed by air which has become entrapped under or between the felts during application.

ADVANTAGES OF THE PERFORATED FELT

As its name implies, the new felt is perforated with numerous small holes, spaced ½" apart over the entire area of the sheet. These perforations serve a double purpose. Their most important function is to allow trapped air to escape during the application of the felt. Each tiny hole acts as a vent through which the air is forced out as the felt is laid down, but which becomes completely sealed



HOW J-M PERFORATED FELTS MINIMIZE BLISTERING

The diagrams above illustrate the action of the J-M Perforated Asbestos Felt. Note how the air is first forced out through the perforations as the felt is laid, then how each tiny "vent" is completely sealed by the hot waterproofing asphalt when the felt is broomed in.

with the hot waterproofing asphalt when the felt is broomed in. (See diagrams on preceding page). Thus blistering hazards are reduced to a minimum.

The perforations also provide another important advantage. They contribute to increased flexibility in the felt, which, as a result, is made to conform more readily to irregularities in the roof deck and is decidedly easier to handle in hot or cold weather. Thus time is saved in application and a better job results.

THOROUGHLY TESTED IN SERVICE

The principle of the perforated felt, although an innovation in a built-up roofing material, is not new. It is commonly employed in the installation of waterproofing membranes, where for many years an open weave fabric has been successfully used. Furthermore, the advantages of the Perforated Felt have been thoroughly tested over a period of more than two years in actual service. Roofing contractors who have used it under a wide range of conditions, have, without exception, acclaimed it a marked improvement over the conventional type of roofing felt — not only from the standpoint of its ability to eliminate air pockets and blisters, but also because of its superior handling qualities.

FIREPROOF — ROTPROOF

In all other respects, the Perforated Felt is identical with other Johns-Manville Asbestos Roofing Felts, both in construction and performance. The perforations, minute in size, are made by small needles which merely push aside the asbestos fibres and do not change either the weight or the strength of the finished product. The new felt is also fireproof and rotproof — two time-tested advantages of the asbestos felt which have been proved through many years of service on hundreds of Johns-Manville Smooth-Surfaced Built-up Roofs. And by virtue of the fact that such a roof requires no further treatment to protect it from the sun, it provides important economies to the owner in terms of low-cost maintenance and freedom from expensive upkeep.

Read what these Experienced Roofing Contractors say about the new J-M Perforated Asbestos Felt:

"At least one of the jobs of Perforated Felts we have applied has been on for about two years, and up to the present time we have not found a single blister even as large as a dime."

C. R. JOYCE, *President, Joyce & Kramer, Inc., Albany, N. Y.*

"There will be no blisters in any of the roofs we have applied with these felts. Moreover, we have been able to make better applications with no increase in our application costs. In fact, we believe we can build a better roof at an actual saving in labor cost."

M. R. FLETCHER, *President and Treasurer, Chattanooga Blow Pipe & Roofing Co., Chattanooga, Tenn.*

"We have been attracted to the new Perforated Asbestos Felt by two advantages. First, it permits us to apply a roof without the usual small blisters. Second, Perforated Felts are swept in place much more quickly than the old-type felt."

GEORGE P. MACATEE, Jr., *President, Macatee, Inc., Dallas, Texas*

"There is no question in our mind that the new Perforated Asbestos Felt is the greatest improvement that has been made in roofing materials in many years. We have applied this material on many of the largest utility and manufacturing companies in this area and have found that in every case the completed job was practically free from any blistering or wrinkling."

STANLEY ALLEN, *Allen Roofing Co., Columbus, Ohio*

"We have been using your Perforated Asbestos Felts for over a year. We are so pleased with the way they have worked out that we feel it our obligation to advise you of our appreciation."

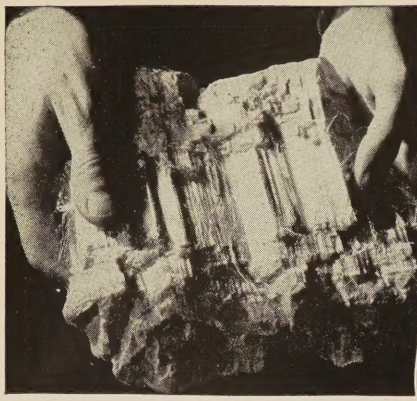
L. F. LINFOOT, *C. L. Linfoot Co., E. Grand Forks, Minn.*

"Our workmen are quite enthusiastic about the new Perforated Felts that bond perfectly when rolled in behind the mop, eliminating entirely air pockets and bridging of irregularities in the roof surface."

W. A. COWLES, *Smith-Murray Corp., Syracuse, N. Y.*

"Our roofing mechanics report that the Perforated Felt laid much smoother than any asbestos felts they have used in years. . . . Our experience on this particular job has determined our policy for the future, which will be to use nothing but Perforated Felts on all built-up roofs."

J. R. GROBMYER, *J. R. Grobmyer Lumber Co., Little Rock, Ark.*

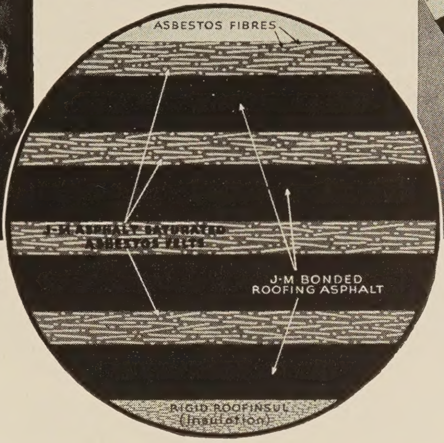


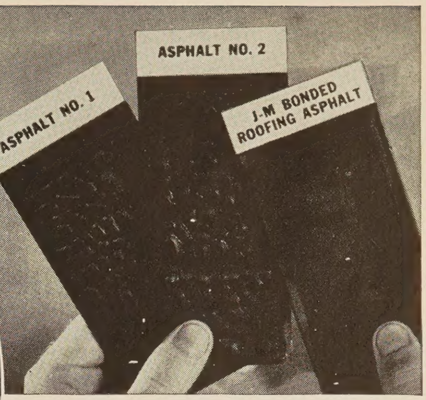
ASBESTOS IN ITS NATURAL STATE

Asbestos — fibres of stone, fireproof, rotproof, enduring—forms the base of a Johns-Manville Built-up Roof. Here crude asbestos fibres are shown in their natural state, attached to the rock matrix.

CROSS-SECTIONAL DIAGRAM OF A 4-PLY ASBESTOS ROOF

The fibres of asbestos felt protect the impregnating asphalt from the sun, and each ply of felt acts as a protective blanket to the underlying layer of waterproofing asphalt.


ASBESTOS FIBRES
J-M ASPHALT SATURATED ASBESTOS FELTS
J-M BONDED ROOFING ASPHALT
RIGID ROOFINSUL (Insulation)



RESULTS OF TESTS ON ASPHALT

After water, heat and cold were played on these samples of roofing asphalt for the equivalent of 10 years of actual weathering, J-M Bonded Roofing Asphalt was still practically as good as new.

J-M Smooth-surfaced Asbestos Built-up Roofs give the best assurance of roof permanence

RESEARCH has been able to find no waterproofing agent better than asphalt, which is less brittle at low temperatures and less fluid at high temperatures than any other known waterproofing material. Yet there are many kinds and grades of asphalt.

In the effort to secure the permanence requisite in a good roofing asphalt, J-M research engineers have developed a processed asphalt known as J-M Bonded Filled Roofing Asphalt, which has shown marked superiority over other asphalts ordinarily used for such purpose. In a series of tests by machine accelerated weathering, the J-M Laboratories subjected samples of Bonded Filled Roofing Asphalt and other commercial asphalts to alternating cycles of exposure to heat, rain and sub-zero temperature, equivalent to ten years of actual service. Although the samples were practically identical in appearance before testing, the illustration above shows how J-M Bonded Asphalt stood up when the others failed.

ASBESTOS FELT GIVES REINFORCEMENT

However, even the best asphalt cannot, alone, make a good roof. There must be a flexible reinforcement, durable and non-combustible, which can itself be impregnated with asphalt to keep it waterproof, and which at the same time will protect the asphalt from its one cause of deterioration — the drying-out action of the sun. Asbestos roofing felt meets these requirements exactly.

As used in built-up roofing, asbestos fibres are first felted and then impregnated with asphalt, thus making a flexible stone roofing material, fireproof and immune to rot and decay.

The characteristic difference between asbestos fibre and all other natural fibres is that asbestos fibre is a solid filament, not a hollow tube. There can be no capillary action through it.

This very lack of capillary action, and consequent resistance to impregnation, is the source of the protection which asbestos felt affords the vital waterproofing asphalt, once the felt has been impregnated with it. The essential oils of the asphalt are protected from evaporation due to the continuous drying-out action of the sun, which so rapidly deteriorates other types of roofing, and the asbestos built-up roof *stays* waterproof.

When the asbestos felt has been impregnated with J-M Bonded Roofing Asphalt, and Bonded Roofing Asphalt is used as the cementing layer between the plies of felt forming the built-up roof, the asphalt is preserved in practically its original condition. The result is a smooth-surfaced roof that *stays* waterproof for years, with minimum upkeep.

PROOF AGAINST FIRE AND DECAY

But asbestos does more than merely protect the asphalt from the sun. Since asbestos felt is virtually felted fibres of stone, it cannot decay; it will not burn. Exhaustive tests by the Underwriters' Laboratories have proved that asbestos felt, even when impregnated and coated with asphalt as used in a J-M Built-Up Roof, will not support combustion. J-M Asbestos Roofs are so fire-resistant that, in every type, there will be found roofs that carry the Underwriters' Class A rating, which takes the base rate of insurance.

The Advantages of a Johns-Manville Smooth-surfaced Asbestos Roof

Proved by time

The lasting qualities of a Johns-Manville Smooth-surfaced Asbestos Roof are clearly demonstrated on pages 8 and 9 on which are listed actual installations of this type of roof which have withstood the elements for more than 20 years.

Can be applied to every roof which will drain water

The use of dead level roof decks is not recommended. Roof decks should be graded to proper drains to prevent the formation of areas which will not drain. Undrained spots become unhealthful and breeding grounds for mosquitoes, as well as causing unequal exposure of different parts of the roof surface which creates the likelihood of developing unequal strains on the roofing.

No protective covering needed

Asbestos Roofing Felts do not require the use of slag or gravel for the protection of the asphalt and the felts. The asbestos in the felt prevents the sun from causing the deterioration or drying-out of the asphalt in and between the felts.

Highly fire-resistant

The J-M 20-year Smooth-surfaced Asbestos Roof is given a Class A rating, and the similar J-M 15-year Roof a Class B rating, by the National Board of Fire Underwriters.

Decay-proof

Asbestos felts, being made from rock fibre and asphalt, can not decay. The roof built up from these felts and asphalts will withstand heat and cold and the constant destructive action of the elements under all conditions.

Leaks easily located

An unforeseen accident or unusual expansion and contraction of the roof deck may damage any roof surface and cause it to leak. With a J-M Smooth-surfaced Asbestos Roof, any such damaged areas can be quickly located.

Easy to repair

The construction of J-M Smooth-surfaced Asbestos Roofs is such that repairs can be made quickly and inexpensively.

No excessive weight

Since the smooth-surfaced asbestos felt roof finish does not require the protection of slag or gravel, construction savings are possible because it is not necessary to support the weight of such materials.

First cost is last cost for waterproofing

Everything included in the J-M built-up roof construction is a waterproofing in itself.

J-M Smooth-surfaced Asbestos Roof on the plant of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wisconsin

APPLYING J-M ROOFINSUL

Roof insulation not only saves fuel and assures comfortable interior temperatures, but also protects both the roof deck and the built-up roof itself.

6 Good Reasons for an Insulated Roof

1. Prevents condensation and roof drip

J-M Roof Insulation prevents condensation on the under side of the deck and eliminates discoloration of ceilings and the annoyance and damage caused by roof drip.

Regardless of how carefully a wood deck may be constructed, vapors penetrate the planking and condense on the underside of the built-up roof. Rot starts at the top, unseen, and works down. While rot can be eliminated by the use of a concrete deck, condensation and roof drip remain.

When air comes in contact with a cooler surface, such as the underside of a roof, its temperature is lowered. If the temperature of the surface is below the dew point of the water vapor in the air, the excess moisture is deposited on the surface as condensation. Insulation of the proper thickness will keep the temperature of the surface above the dew point and thus prevent the deposition of moisture.

2. Protects deck against rot and corrosion

By preventing condensation, J-M Roof Insulation protects the deck against rot and corrosion. When the deck is of concrete or other non-combustible material, the insulation reduces the danger of cracking (commonly caused by sudden temperature changes) and thereby tends to prevent moisture from reaching the reinforcing steel members.

3. Prevents damage to roofing felts through deck movement

J-M Roof Insulation protects the roofing felts themselves. All roof decks move, to some extent, under temperature changes. When this alternate expansion and contraction continues over a long period of time, any cracks which may occur in the deck may eventually be transmitted to the built-up roof unless there is an intervening layer of insulation. J-M Roof Insulation not only minimizes movement of the deck by keeping its temperature more uniform, but also has sufficient resiliency to take up strains due to any movement which does occur.

4. Provides closer interior temperature control

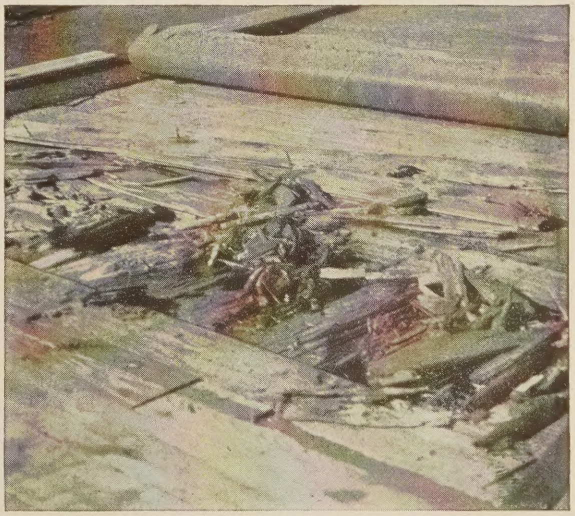
J-M Roof Insulation permits closer control over interior temperatures both in summer and winter, assuring more comfortable, uniform working conditions throughout the year. Uniform interior temperatures are also a vital necessity in the operation of many modern industrial processes.

5. Improves working conditions

Insulation with J-M Roof Insulation effectively retards the passage of heat through the roofs, thus helping to keep the building cool in the summer and easier to heat in the winter.

6. Lowers heating and air-conditioning costs

On new construction, J-M Roof Insulation makes it possible to reduce considerably the investment in heating and air-conditioning equipment. And on either new or old buildings, it lowers operating costs appreciably on such equipment.



The proper thickness of J-M Roof Insulation over this wood deck would have prevented moisture condensation—the cause of the decay

JOHNS-MANVILLE ROOF INSULATION

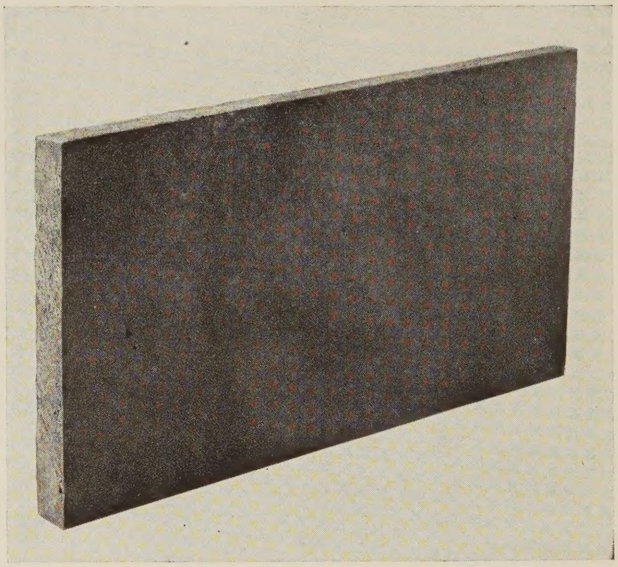
Either J-M Rock Cork Roof Insulation or J-M Roofinsul can be used over wood or non-combustible (except steel) decks of the usual pitches. On steel decks, Roofinsul is required because, being the more rigid of the two materials, it makes a better and firmer bridge between the ribs of the steel deck.

Special Johns-Manville roofs designed to withstand particular humidity conditions are the J-M Rot-proof Insulated Roof and the J-M Schultz-type Insulated Roof. Complete data concerning these roofs will be sent on request.

J-M Rock Cork Roof Insulation

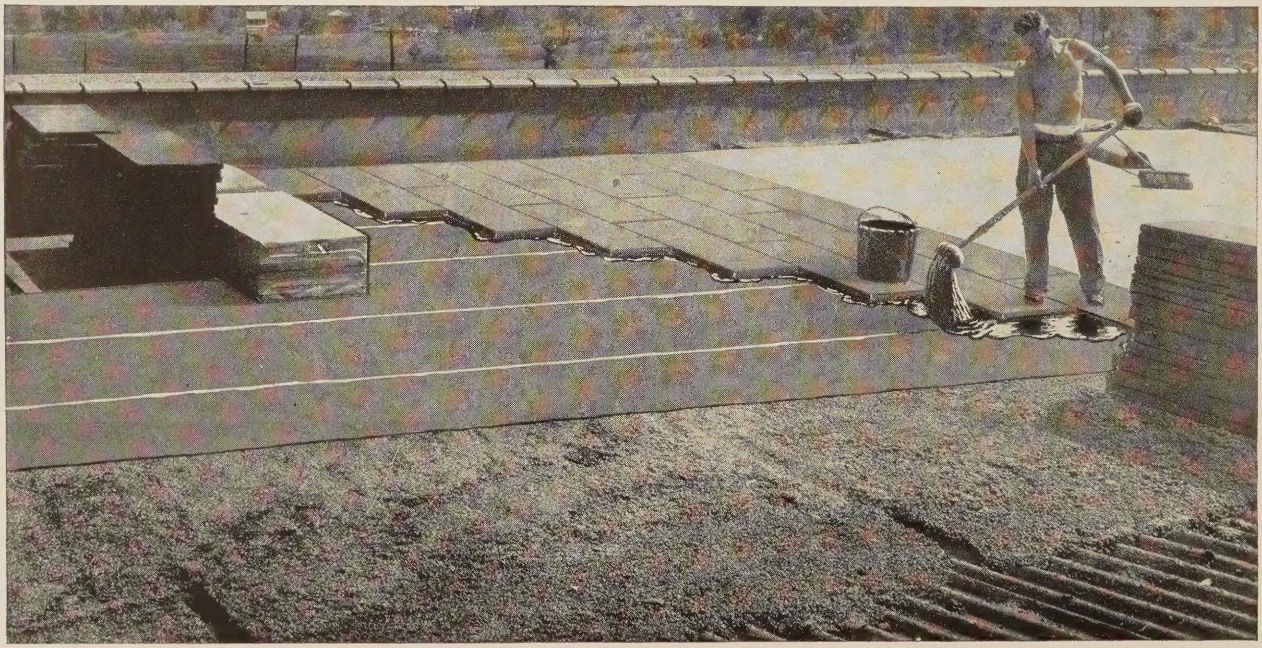
Rock Cork is an excellent insulating material which, because of its composition, will maintain its efficiency indefinitely. It is made of mineral wool combined with a waterproof binder, then moulded into sheet form and baked. Rock Cork Roof Insulation is Rock Cork surfaced on one side with J-M 15-lb. Asphalt-Saturated Rag Felt which is applied with a high melting point asphalt and trimmed flush with the insulation. Laboratory tests indicate that at a temperature of about 70 deg. F. the conductivity of this long-lived insulation is 0.32.

If wetted, Rock Cork will not rot, support mold or disintegrate. Should water get to it, the roof insulation, which is non-capillary, will not swell or shrink. The inertness of Rock Cork is protection to the built-up roof because there is no warping or expansion pressure to cause damage from underneath. Rock Cork Roof Insulation at about 85 deg. F. will sustain evenly distributed loads of 500 lb. per sq. ft. with a compression not exceeding .015″ per inch of thickness.



The factory-applied felt on sheets of Rock Cork permit felt-to-felt bonding between the insulation and the built-up roof

The ideal bond, felt-to-felt, secures this insulation to the built-up roof. One felt is factory-applied to the Rock Cork with a high melting point asphalt; and, on the job, the felt of the roofing is mopped to the felt of the insulation. When the insulation is laid, the fibrous nature of Rock Cork permits tight joints and the sheets rest on the roof, snugly conforming to irregularities in the deck.

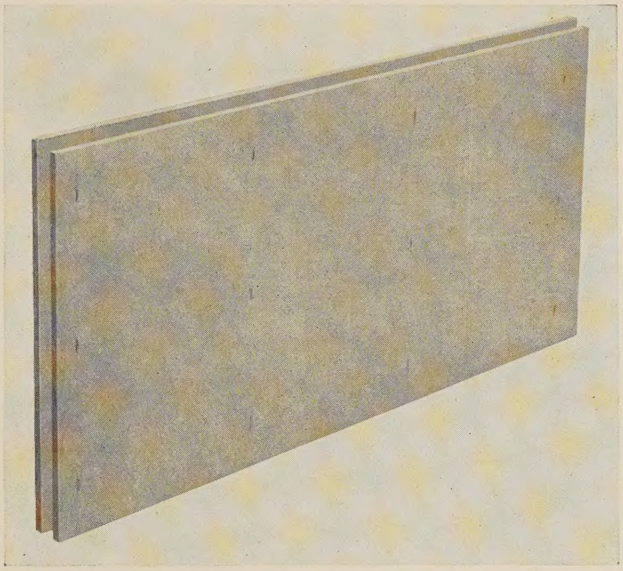


Applying Rock Cork Roof Insulation over the mastic levelling fill on the corrugated Transite deck of a J-M Insulated Rot-proof Roof

Rock Cork Roof Insulation sheets are of a size easy to handle and are sufficiently strong so that they can be applied with practically no breakage. They are furnished 18″ x 36″, in thicknesses of 1″, 1½″, and 2″ and are packed in cartons containing 54, 36 and 27 sq. ft., respectively. Approximate weight per sq. ft. of Rock Cork in the 1″ thickness is 1.6 lb.; for the 1½″ thickness, 2.2 lb.; and for the 2″ thickness, 2.8 lb.

J-M Roofinsul

J-M Roofinsul, the same material as J-M Insulating Board, is a light weight, efficient insulation which is made of southern pine fibre, interlaced, felted and rolled into boards of the most practical size. At about 75 deg. F. it has conductivity of 0.36. In addition to its high insulating value, Roofinsul possesses structural strength and rigidity. It is economical and easily installed and can be cut and nailed in the same manner as wood.



J-M Roofinsul

Roofinsul is supplied 23″ x 47″, ½″ thick, with square edges. Thicknesses of 1″, 1½″ and 2″ are also furnished cemented and stapled together with a shiplap joint on all sides or with square edges. The shiplap joint is ¾″ for 1″ and 1½″-thick Roofinsul and 1″ for the 2″ thickness.

Packages of ½″ Roofinsul contain 100 sq. ft. (1 square). Packages of 1″ Roofinsul contain 50 sq. ft.; those of 1½″ and 2″ thicknesses, 28.7 sq. ft. Roofinsul weighs about 0.75 lb. per sq. ft., ½″ thick.

Heat Losses for Insulated and Uninsulated Roofs*

Type of Roof	Thickness of J-M Roof Insulation	Heat Loss in B.t.u. per sq. ft., per deg. F. temperature difference air to air, per hour	
		Roofinsul	Rock Cork
25/32″ wood deck (nominal 1″) and smooth-surfaced built-up roof	None	0.49	0.49
	½″	0.29	—
	1″	0.21	0.19
	1½″	0.16	0.15
	2″	0.13	0.12
1⅝″ wood deck (nominal 2″) and smooth-surfaced built-up roof	None	0.32	0.32
	½″	0.22	—
	1″	0.17	0.16
	1½″	0.14	0.13
	2″	0.12	0.11
3″ gypsum† tile and smooth-surfaced built-up roof	None	0.48	0.48
	½″	0.29	—
	1″	0.21	0.19
	1½″	0.16	0.15
	2″	0.13	0.12
4″ concrete (stone) and smooth-surfaced built-up roof	None	0.73	0.73
	½″	0.36	—
	1″	0.24	0.22
	1½″	0.18	0.17
	2″	0.14	0.13
6″ concrete (stone) and smooth-surfaced built-up roof	None	0.65	0.65
	½″	0.34	—
	1″	0.23	0.21
	1½″	0.18	0.16
	2″	0.14	0.13
steel deck and smooth-surfaced built-up roof	None	0.94**	0.94**
	½″	0.41	—
	1″	0.26	0.24
	1½″	0.19	0.17
	2″	0.15	0.14

* Resistances for other than J-M Materials, including exterior surface resistance of 0.17, are as recommended in the A. S. H. & V. E. Guide.

** Including resistance of built-up roof; although in practice such a roof is not laid over a bare steel deck.

† The heat loss through 3″ gypsum fibre concrete poured on ⅜″ plaster board is equivalent to that of 1⅝″ wood deck.

Protecting roof insulation against humidity

For many years it has been generally recognized that wherever humid conditions may be encountered, it is essential that roof insulation be protected on the underside against the absorption of moisture. Specifications of architects and roofing manufacturers have, therefore, called for a membrane waterproofing course under the insulation wherever it was known at the time the roof was designed that the insulation would be subjected to such conditions.

But there are occasions when, after a relatively few years, there is a change in the use to which a building is put. From an operation not in the least humid, the condition may change almost overnight into one which exposes the insulation to severe moisture conditions.

All types of roof insulation will absorb moisture. The very factor that makes the material effective as an insulation — porosity — is, of course, responsible for its ready absorption of moisture. When insulation on a roof becomes water-soaked, the results are:

(a) A serious reduction in insulating efficiency.

(b) Destruction of bond between insulation and roofing felts.

(c) Disintegration of the insulating material.

(d) Almost certain damage to the roof deck itself.

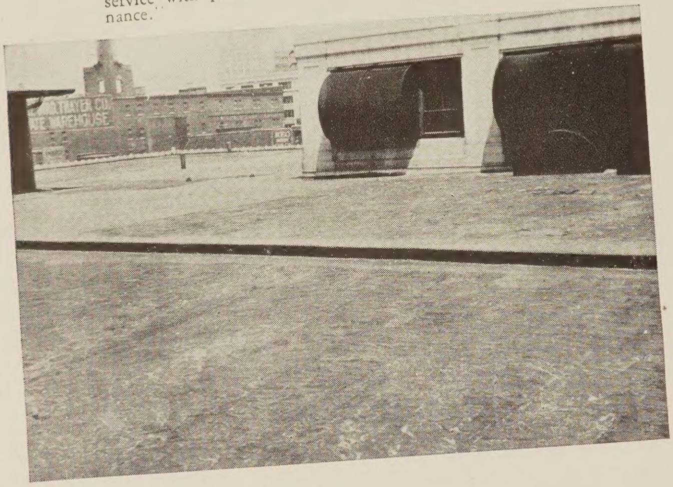
(e) Possible damage to the building contents.

(f) An expensive re-roofing and re-insulation job.

All Johns-Manville Roof Insulation Specifications call for the application of a layer of roofing felt under the insulation.

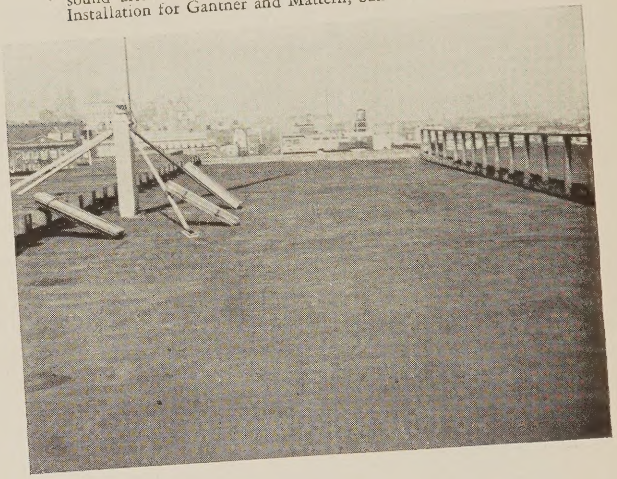
A 30-YEAR OLD AT KANSAS CITY, MO.

In 1912, this J-M roof was applied on the building of the Kansas City Star. Says the owner, "Certain portions are subjected to foot traffic, but it has given excellent service with practically no cost for repairs or maintenance."



A 29-YEAR OLD AT SAN FRANCISCO, CALIF.

This J-M Built-Up Roof—bonded for 20 years—is still sound after 29 years, and looks good for years to come. Installation for Gantner and Mattern, San Francisco, Calif.

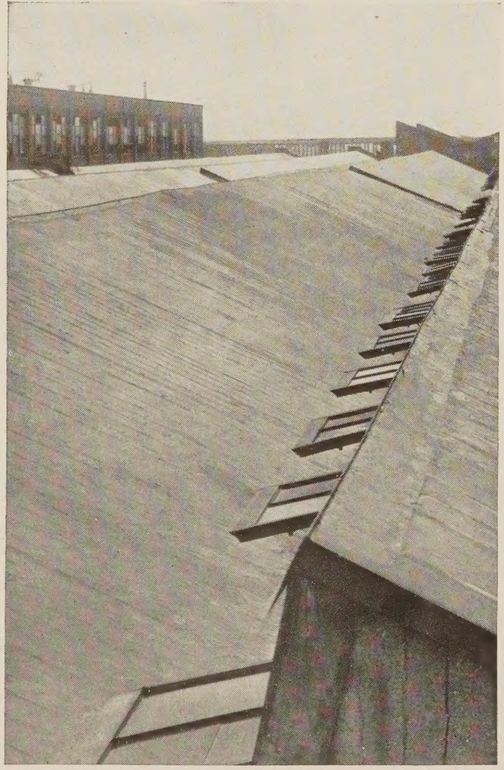


Some J-M Smooth-surfaced Asbestos Roofs prime, though more than 20 years old . . .

Johns-Manville Smooth-surfaced Asbestos Built-up Roofs have an unusual performance record, as evidenced by the roofs illustrated or listed on these pages. These are but a few of the many J-M roofs which have had a service life of 20 years or longer.

Note the pleasing gray appearance of the roofs. As has previously been explained, this gray surface is the top-most layer of the asbestos fibres in the asbestos felt which blankets the vital waterproofing asphalt and protects it from the deteriorating action of the sun.

In addition to the nine roofs illustrated on these pages, there are many other Johns-Manville Built-up Roofs with service records of more than 20 years. Following are a few typical examples:

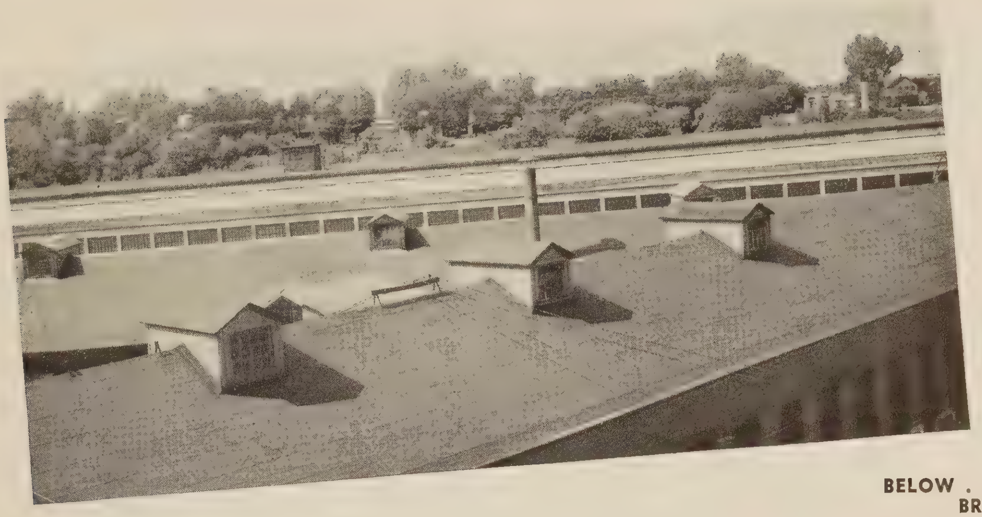


A 31-YEAR OLD AT SOUTH BEND, IND.

This J-M Smooth-surfaced Asbestos Roof has been protecting the Oliver Farm Equipment Co., factory for more than a quarter century.

A 32-YEAR OLD AT BEACH GROVE, IND.

This J-M Smooth-surfaced Asbestos Roof was applied in 1910. The photograph shows that it is still in good condition and will undoubtedly give many more years of satisfactory service.



LEFT . . . A 25-YEAR OLD AT WATERTOWN, N. Y.

Bagley and Sewall Company report that their J-M Smooth-surfaced Asbestos Roofs appear to be in condition to last many years longer.

BELOW . . . A 25-YEAR OLD AT BROOKLYN, N. Y.

The roof of the Poly Prep Country Day School is still in excellent condition long after the bonding period has elapsed.

which are still in their

At Detroit, Mich.

Detroit Baseball Company reports. "Your asbestos roofs were installed in 1912 on right and left field pavilions at Navin Park. They have withstood weather and the added punishment of thousands of baseballs striking them. The material appears in good condition."

At Bluefield, W. Va.

Huff, Andrews and Thomas Company writes about their J-M roof, "Overhead expense has been reduced to a minimum. . . . Anticipate many more years of service on this roof."

At Seattle, Wash.

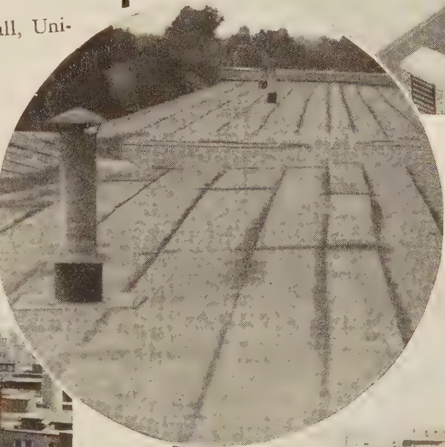
The world war had just started, in 1914, when a J-M roof was applied on the Lincoln High School in Seattle. The asbestos felts are in splendid shape today.

At Louisville, Ky.

National Distillers Products Corporation writes, "The performance more than speaks for itself."

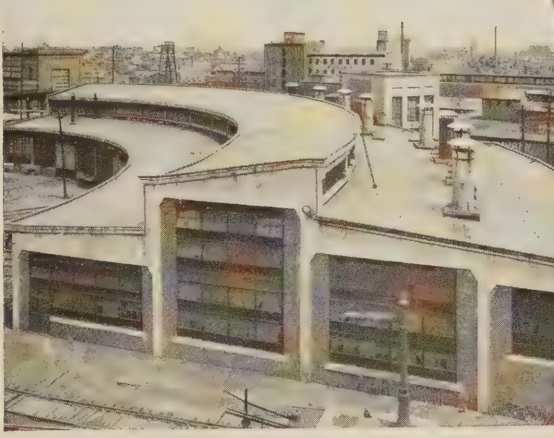
At Seattle, Wash.

The roof of Meany Hall, University of Washington, is still in good condition, although it was applied as long ago as 1915.



LEFT . . . A 25-YEAR OLD AT INDIANAPOLIS, IND.

The roof of Building No. 16 of the Link Belt Co. was laid in 1917—and is still good.



A 24-YEAR OLD AT PHILADELPHIA, PA.

The roof of the Tulip St. Engine House of the Reading Company, laid in 1918, is typical of the service given by J-M Smooth-surfaced Asbestos Roofs.

A 29-YEAR OLD AT SEATTLE, WASH.

On the Bell St. Dock, Port of Seattle, the J-M Smooth-surfaced Asbestos Roof, laid in 1913, is still good for many years.

Index and Condensed Specifications for

Pitch of Roof per Foot, in Inches	Bond, Years (See Note*)	J-M Specification Number	Page	Number of Plies and Kind of Felt	Number of Moppings Asphalt (A) or Pitch (P)	Weight of Materials, in Pounds per Square								Total Weight per Square, in Pounds			Approved by Underwriters'
							Felts										
						Sheathing Paper	Asbestos	Rag	Asphalt	Pitch	Primer and/or Roof Coating	Gravel	Slag	Smooth Surface or Crushed Slate	Gravel Surface	Slag Surface	
Without Insulation																	
WOOD DECK ONLY																	
Smooth Surface																	
½ to 6	20	100	12	One 55-lb. Asphalt-Saturated Asbestos Felt Three 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	—	100 or 115	—	90	—	8	—	—	198 or 213	—	—	√
½ to 6	15	103	12	One 55-lb. Asphalt-Saturated Asbestos Felt Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-2	—	85 or 95	—	60	—	8	—	—	153 or 163	—	—	√
½ to 6	15	200	13	One No. 45 Asphalt-Saturated Rag Felt Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-2	—	30 or 40	50	60	—	8	—	—	148 or 158	—	—	—
½ to 6	10	202	13	One No. 30 Asphalt-Saturated Rag Felt Two 15 or 20-lb. Asphalt Saturated Asbestos Felts	A-2	—	30 or 40	33½	60	—	8	—	—	131½ or 141½	—	—	—
½ to 6	20	205	14	One No. 45 Asphalt-Saturated Rag Felt Three 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	—	45 or 60	50	90	—	8	—	—	193 or 208	—	—	—
Crushed Slate Surface																	
1 to 4	10	402	†	Three 15-lb. Asphalt-Saturated Rag Felts Two Split-Sheet Slatekote	A-4	—	110	49	120	—	—	—	—	279	—	—	√
4 to 6	10	400	†	Two 15-lb. Asphalt-Saturated Rag Felts Two Split-Sheet Slatekote	A-2	—	110	32½	60	—	—	—	—	202½	—	—	√
WOOD or PRE-CAST GYPSUM DECK																	
Gravel or Slag Surface																	
Not to exceed 2	20	600**	18	One ply Rosin-Sized Paper (over wood only) Five 15-lb. Tar-Saturated Asbestos Felts	P-4	5	81	—	—	150	—	400	300	—	636	536	√
Not to exceed 2	15	604**	19	One ply Rosin-Sized Paper (over wood only) Four 15-lb. Tar-Saturated Asbestos Felts	P-3	5	65	—	—	125	—	400	300	—	595	495	√
2 to 6	10	601**	19	One ply Rosin-Sized Paper (over wood only) Five 15-lb. Tar-Saturated Asbestos Felts	P-4 A-1	5	81	—	45	80	—	—	250	—	—	461	√
NON-COMBUSTIBLE DECK																	
(except STEEL)																	
Smooth Surface																	
½ to 6	20	101	15	One 55-lb. Asphalt-Saturated Asbestos Felt Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	—	85 or 95	—	90	—	16	—	—	191 or 201	—	—	√
½ to 6	15	201	15	One No. 45 Asphalt-Saturated Rag Felt Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	—	30 or 40	50	90	—	16	—	—	186 or 196	—	—	—
½ to 6	10	203	16	One No. 30 Asphalt -Saturated Rag Felt Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	—	30 or 40	33½	90	—	16	—	—	169½ or 179½	—	—	—
(Except PRE-CAST GYPSUM or STEEL)																	
Gravel or Slag Surface																	
Not to exceed 2	20	602**	20	Four 15-lb. Tar-Saturated Asbestos Felts	P-5	—	65	—	—	200	—	400	300	—	665	565	√
Not to exceed 2	15	605**	20	Three 15-lb. Tar-Saturated Asbestos Felts	P-4	—	49	—	—	175	—	400	300	—	624	524	√
2 to 6	10	603**	21	Four 15-lb. Tar-Saturated Asbestos Felts	P-4 A-1	—	65	—	45	100	—	—	250	—	—	460	√
Crushed Slate Surface																	
1 to 4	10	403	†	Three 15-lb. Asphalt-Saturated Rag Felts Two Split-Sheet Slatekote	A-5	—	110	49	150	—	16	—	—	325	—	—	√
4 to 6	10	401	†	One 15-lb. Asphalt-Saturated Rag Felt Two Split-Sheet Slatekote	A-3	—	110	16	90	—	16	—	—	232	—	—	√
Under Promenade Tile																	
Not to exceed 1	§	612**	21	Five 15-lb. Tar-Saturated Asbestos Felts	P-6	—	81	—	—	200	—	—	—	—	281	—	—

Johns-Manville Bonded Built-up Roofs

Pitch of Roof per Foot, in Inches	Bond, Years (See Note*)	J-M Specification Number	Page	Number of Plies and Kind of Felt	Number of Moppings Asphalt (A) or Pitch (P)	Weight of Materials, in Pounds per Square								Total Weight per Square, in Pounds			Approved by Underwriters'
						Asphalt-saturated Fabric	Felts		Asphalt	Pitch	Primer and/or Roof Coating	Gravel	Slag	Smooth Surface or Crushed Slate	Gravel Surface	Slag Surface	
							Asbestos	Rag									
With Insulation																	
STEEL DECK Steel decks require insulation under any type of built-up roof. See Specifications No. 502 and No. 1002 and the section "Application of Roofing over Insulation," on opposite page.																	
APPLICATION OF INSULATION																	
(To be overlaid with a J-M Built-up Roof employing ASPHALT)																	
		500	23	For Application of insulation over a WOOD or PRECAST GYPSUM DECK													
		501	24	For Application of insulation over a NON-COMBUSTIBLE DECK (except Steel)													
		502	23	For Application of insulation over a STEEL DECK													
(To be overlaid with a J-M Built-up Roof employing COAL TAR PITCH)																	
		1000	25	For Application of insulation over a WOOD or PRECAST GYPSUM DECK													
		1001	24	For Application of insulation over a NON-COMBUSTIBLE DECK (except Steel)													
		1002	25	For Application of insulation over a STEEL DECK													
APPLICATION OF ROOFING OVER INSULATION (Any type of deck)																	
Smooth Surface																	
½ to 6	20	125	17	Four 15 or 20-lb. Asphalt Saturated Asbestos Felts	A-5	—	60 or 80	—	130	—	8	—	—	198 or 218	—	—	√
½ to 6	15	126	17	Three 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-4	—	45 or 60	—	100	—	8	—	—	153 or 168	—	—	√
½ to 6	10	127	†	One 15-lb. Bonded Asphalt-Saturated Rag Felt. Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-4	—	30 or 40	16	100	—	8	—	—	154 or 164	—	—	—
Gravel or Slag Surface																	
Not to exceed 2	20	602**	20	Four 15-lb. Tar-Saturated Asbestos Felts	P-5	—	65	—	—	200	—	400	300	—	665	565	√
Not to exceed 2	15	605**	20	Three 15-lb. Tar-Saturated Asbestos Felts	P-4	—	49	—	—	175	—	400	300	—	624	524	√
2 to 6	10	603**	21	Four 15-lb. Tar-Saturated Asbestos Felts	P-4 A-1	—	65	—	45	100	—	—	250	—	—	460	√
SPRAY POND																	
Smooth Surface—Wood Deck																	
Not to exceed 2	10	110	14	One 55-lb. Asphalt-Saturated Asbestos Felt One ply Type B Waterproofing Fabric Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-3	11	85 or 95	—	115	—	—	—	—	211 or or 221	—	—	—
Smooth Surface—Non-combustible Deck																	
Not to exceed 2	10	111	16	One 55-lb. Asphalt-Saturated Asbestos Felt One ply Type B Waterproofing Fabric Two 15 or 20-lb. Asphalt-Saturated Asbestos Felts	A-4	11	85 or 95	—	145	—	8 to 24	—	—	249 to 275	—		—
Gravel or Slag Surface (Double Surfacing)—Non-combustible Deck																	
Not to exceed ½	§	613**	22	Four 15-lb. Tar-Saturated Asbestos Felts	P-6	—	65	—	—	300	—	700	500	—	1065	865	—

NOTES:

* No roofing bonds are issued on the Pacific Coast.

** Available, also, employing rag felt instead of asbestos felt.

† Detailed specification does not appear in these pages, but will be sent free on application.

*** Class A Underwriters' rating on pitches to and including 3" per foot.

§ Bond term on application.

SPECIFICATION No. 100

J-M 20-YEAR ROOF
OVER WOOD DECKS

Surface: SMOOTH

Felts: ASBESTOS

Waterproofing: ASPHALT

Inclines: ½ in. to 6 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT:	1 layer of J-M Standard Asbestos Built-up Roofing Felt.	55 lb.
FINISHING FELTS:	3 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt...	45 or 60 lb.
ASPHALT:	J-M Bonded Roofing Asphalt........................	90 lb.
ROOF COATING:	J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

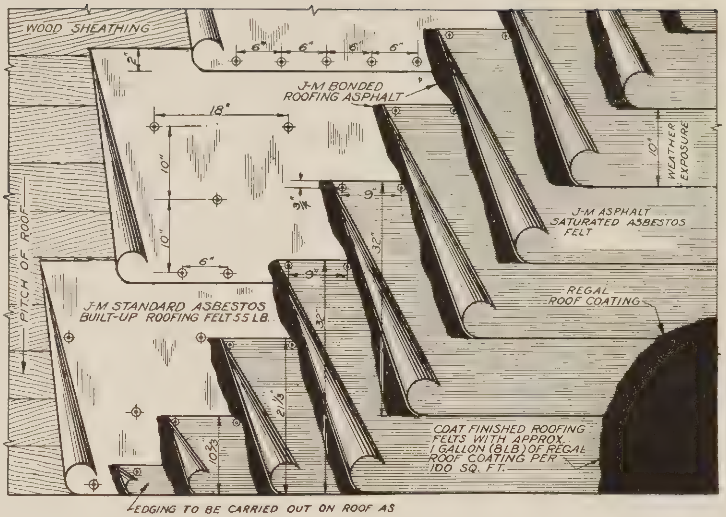
ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.


WOOD SHEATHING
6″
6″
6″
6″
2″
J-M BONDED ROOFING ASPHALT
18″
10″
10″
6″
3¼
9″
9″
32″
32″
10″
WEATHER EXPOSURE
J-M ASPHALT SATURATED ASBESTOS FELT
REGAL ROOF COATING
PITCH OF ROOF
J-M STANDARD ASBESTOS BUILT-UP ROOFING FELT 55 LB.
21⅓
10⅔
COAT FINISHED ROOFING FELTS WITH APPROX. 1 GALLON (8LB) OF REGAL ROOF COATING PER 100 SQ. FT.
EDGING TO BE CARRIED OUT ON ROOF AS SHOWN AND TURNED DOWN OVER FASCIA.

Roofing—Lay one thickness of the base felt, lapping the sheets 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet, in two lines spaced 10″ apart, the nails to be staggered.

Over the base felt, lay three plies of the 15 or 20-lb. felt, lapping each sheet 22″ over the preceding one, mopping the full width under each with the asphalt and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

SPECIFICATION No. 103

J-M 15-YEAR ROOF
OVER WOOD DECKS

Surface: SMOOTH
Waterproofing: ASPHALT

Felts: ASBESTOS
Inclines: ½ in. to 6 in. per ft.

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT:	1 layer of J-M Standard Asbestos Built-up Roofing Felt	55 lb.
FINISHING FELTS:	2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt....	30 or 40 lb.
ASPHALT:	J-M Bonded Roofing Asphalt........................	60 lb.
ROOF COATING:	J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the base felt, lapping the sheets 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet, in two lines spaced 10″ apart, the nails to be staggered.

Over the base felt, lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

SPECIFICATION No. 200

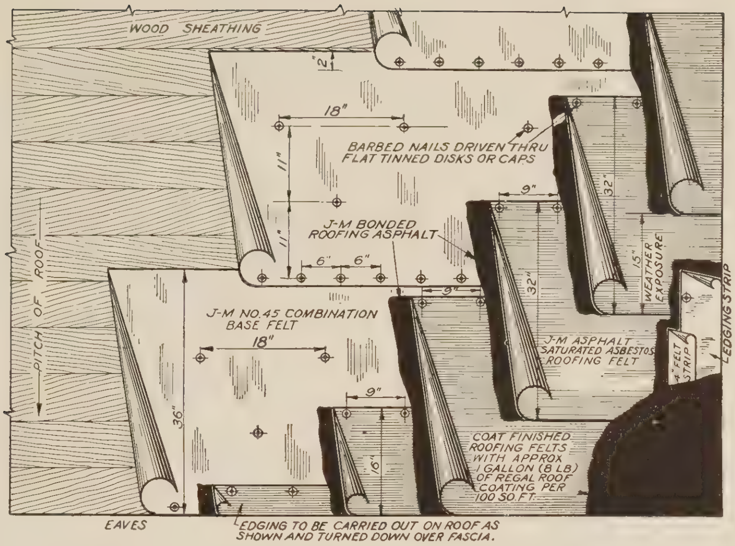
J-M 15-YEAR ROOF OVER WOOD DECKS

Surface: SMOOTH

Felts: ASBESTOS and RAG

Waterproofing: ASPHALT

Inclines: ½ in. to 6 inches per foot


WOOD SHEATHING
2"
18"
BARBED NAILS DRIVEN THRU FLAT TINNED DISKS OR CAPS
11"
11"
9"
32"
J-M BONDED ROOFING ASPHALT
6"
6"
15" WEATHER EXPOSURE
PITCH OF ROOF
9"
32"
LEDGING STRIP
J-M NO. 45 COMBINATION BASE FELT
18"
J-M ASPHALT SATURATED ASBESTOS ROOFING FELT
4" FELT STRIP
9"
36"
16"
COAT FINISHED ROOFING FELTS WITH APPROX 1 GALLON (8 LB) OF REGAL ROOF COATING PER 100 SQ. FT.
EAVES
EDGING TO BE CARRIED OUT ON ROOF AS SHOWN AND TURNED DOWN OVER FASCIA.

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 45 Base Felt (Rag Felt, 50 lbs. per 108 sq. ft.)	50 lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
ASPHALT: J-M Bonded Roofing Asphalt	60 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the base felt, lapping the sheets 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet in two lines spaced 11″ apart, the nails to be staggered.

Over the base felt, lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

SPECIFICATION No. 202

J-M 10-YEAR ROOF OVER WOOD DECKS

Surface: SMOOTH Felts: ASBESTOS and RAG

Waterproofing: ASPHALT

Inclines: ½ in. to 6 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 30 Combination Base Felt (Rag Felt, 33½ lbs. per 108 sq. ft.)	33½ lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
ASPHALT: J-M Bonded Roofing Asphalt	60 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the base felt, lapping the sheets 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet, in two lines spaced 11″ apart, the nails to be staggered.

Over the base felt, lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Guaranty Bond.

SPECIFICATION No. 205

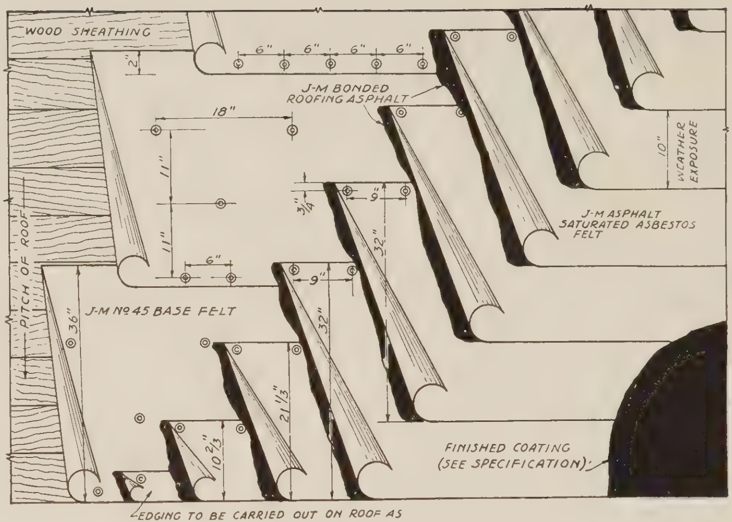
J-M 20-YEAR ROOF OVER WOOD DECKS

Surface: SMOOTH

Felts: ASBESTOS and RAG

Waterproofing: ASPHALT

Inclines: ½ in. to 6 inches per foot



EDGING TO BE CARRIED OUT ON ROOF AS SHOWN AND TURNED DOWN OVER FASCIA

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 45 Base Felt (Rag Felt, 50 lbs. per 108 sq. ft.)	50 lb.
FINISHING FELTS: 3 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	45 or 60 lb.
ASPHALT: J-M Bonded Roofing Asphalt	90 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the base felt, lapping the sheets 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet, in two lines spaced 11″ apart, the nails to be staggered.

Over the base felt, lay three plies of the 15 or 20-lb. felt, lapping each sheet 22″ over the preceding one, mopping the full width under each with the asphalt and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

SPECIFICATION No. 110

J-M 10-YEAR ROOF OVER WOOD SPRAY DECKS

Surface: SMOOTH

Felts: ASBESTOS and ASPHALT-SATURATED FABRIC

Waterproofing: ASPHALT WATERPROOFING CEMENT

Inclines: Not to exceed 2 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M Standard Asbestos Roofing Felt	55 lb.
WATERPROOFING FABRIC: 1 layer of J-M Type B Asphalt-Saturated Fabric (11 lbs. per 112 sq. ft.)	11 lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
WATERPROOFING CEMENT: J-M Standard Asphalt Waterproofing Cement. For mopping between felts	90 lb.
For surface finish	25 lb.

ROOF DECK

(Copy from Specification No. 205, above.)

INSTALLATION

General—All roofing felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one ply of the base felt, lapping the sheet 2″ and nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet, in two lines spaced 10″ apart, the nails to be staggered.

Over the base felt lay one ply of the waterproofing fabric, lapping each sheet 3″ and mopping the full width under each with the asphalt waterproofing cement.

Over the waterproofing fabric lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt waterproofing cement and nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with not less than 25 lbs. of the asphalt waterproofing cement per 100 sq. ft.

Flashing—*(Copy from J-M Standard specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

(Copy from Specification No. 205, above, except change to "Ten-Year".*)*

SPECIFICATION No. 101

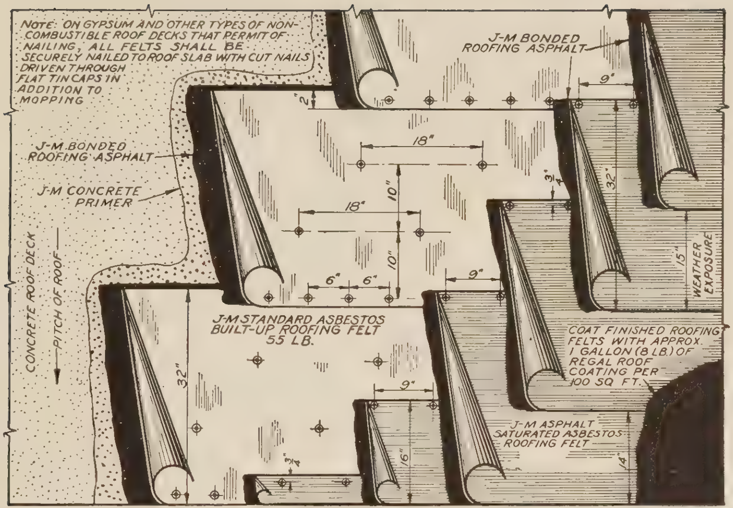
J-M 20-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

Surface: SMOOTH

Felts: ASBESTOS

Waterproofing: ASPHALT

Inclines: ½ in. to 6 inches per foot


NOTE: ON GYPSUM AND OTHER TYPES OF NON-COMBUSTIBLE ROOF DECKS THAT PERMIT OF NAILING, ALL FELTS SHALL BE SECURELY NAILED TO ROOF SLAB WITH CUT NAILS DRIVEN THROUGH FLAT TIN CAPS IN ADDITION TO MOPPING
J-M BONDED ROOFING ASPHALT
J-M BONDED ROOFING ASPHALT
J-M CONCRETE PRIMER
CONCRETE ROOF DECK
PITCH OF ROOF
2"
9"
18"
18"
10"
10"
¾"
32"
6"
6"
9"
15" WEATHER EXPOSURE
J-M STANDARD ASBESTOS BUILT-UP ROOFING FELT 55 LB.
COAT FINISHED ROOFING FELTS WITH APPROX. 1 GALLON (8 LB.) OF REGAL ROOF COATING PER 100 SQ FT.
32"
9"
J-M ASPHALT SATURATED ASBESTOS ROOFING FELT
¾"
16"
14"

EDGING TO BE CARRIED OUT ON ROOF AS SHOWN AND TURNED DOWN OVER FASCIA

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M Standard Asbestos Built-Up Roofing Felt	55 lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
ASPHALT: J-M Bonded Roofing Asphalt	90 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Coat all surfaces, which are to receive the roofing, with the primer and allow to dry. Where necessary, on gypsum, apply two coatings.

If deck is composed of precast units, the primer and asphalt shall be omitted 4″ each side of all joints.

Lay one thickness of the base felt, lapping the sheets 2″, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet in two lines spaced 10″ apart, the nails to be staggered.

Over the base felt, lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 9″ centers adjacent to the back edge.

With nailing strips provided as required, nail each sheet of the base felt at 6″ centers at each nailing strip. Nail each sheet of the 15 or 20-lb. felt at each nailing strip ¾″ from the back edge.

Coat the entire surface with the roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

SPECIFICATION No. 201

J-M 15-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

Surface: SMOOTH Felts: ASBESTOS and RAG

Waterproofing: ASPHALT

Inclines: ½ in. to 6 ins. per ft.

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 45 Base Felt (Rag Felt, 50 lb. per 108 sq. ft.)	50 lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
ASPHALT: J-M Bonded Roofing Asphalt	90 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—*(Copy from Specification No. 101, above.)*

Roofing—*(Copy from Specification No. 101, above, changing the spacing of the nails from 10″ to 11″.)*

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

SPECIFICATION No. 203

J-M 10-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

Surface: SMOOTH Felts: ASBESTOS and RAG
Waterproofing: ASPHALT
Inclines: ½ in. to 6 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 30 Combination Base Felt (Rag Felt, 33½ lb. per 108 sq. ft.)	33½ lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
ASPHALT: J-M Bonded Roofing Asphalt	90 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—*(Copy from Specification No. 101, on previous page.)*

Roofing—*(Copy from Specification No. 101, on previous page, changing the spacing of the nails from 10″ to 11″.)*

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Bond.

SPECIFICATION No. 111

J-M 10-YEAR ROOF OVER NON-COMBUSTIBLE SPRAY DECKS

Surface: SMOOTH

Felts: ASBESTOS and ASPHALT SATURATED FABRIC

Waterproofing: ASPHALT WATERPROOFING CEMENT

Inclines: Not to exceed 2 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M Standard Asbestos Built-up Roofing Felt	55 lb.
WATERPROOFING FABRIC: 1 layer of J-M Type B Asphalt-Saturated Fabric (11 lbs. per 112 sq. ft.)	11 lb.
FINISHING FELTS: 2 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	30 or 40 lb.
PRIMER: J-M Concrete Primer (8 lbs. per gallon)	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
WATERPROOFING CEMENT: J-M Standard Waterproofing Cement	
For mopping deck and between felts	120 lb.
For surface finish	25 lb.

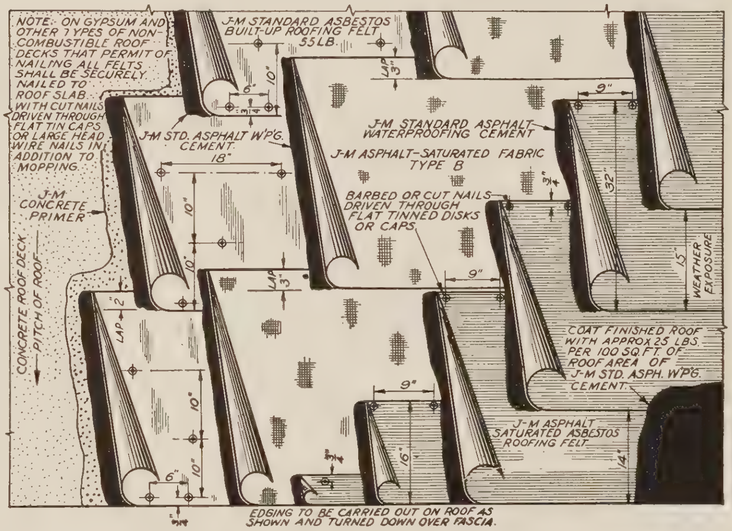
ROOF DECK

(a) Deck construction, including cants, covers or fillets, shall be properly graded to gutters and drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.


NOTE: ON GYPSUM AND OTHER TYPES OF NON-COMBUSTIBLE ROOF DECKS THAT PERMIT OF NAILING ALL FELTS SHALL BE SECURELY NAILED TO ROOF SLAB WITH CUT NAILS DRIVEN THROUGH FLAT TIN CAPS OR LARGE HEAD WIRE NAILS IN ADDITION TO MOPPING.
J-M STANDARD ASBESTOS BUILT-UP ROOFING FELT 55 LB.
J-M STD. ASPHALT W'P'G. CEMENT
J-M STANDARD ASPHALT WATERPROOFING CEMENT
J-M ASPHALT-SATURATED FABRIC TYPE B
BARBED OR CUT NAILS DRIVEN THROUGH FLAT TINNED DISKS OR CAPS
J-M CONCRETE PRIMER
CONCRETE ROOF DECK
PITCH OF ROOF
COAT FINISHED ROOF WITH APPROX 25 LBS. PER 100 SQ.FT. OF ROOF AREA OF J-M STD. ASPH. W'P'G. CEMENT
J-M ASPHALT SATURATED ASBESTOS ROOFING FELT
WEATHER EXPOSURE
LAP 3"
LAP 2"
6"
10"
18"
9"
32"
15"
16"
14"
¾"
EDGING TO BE CARRIED OUT ON ROOF AS SHOWN AND TURNED DOWN OVER FASCIA.

Roofing—Coat all surfaces, which are to receive the roofing, with the primer and allow to dry. Where necessary, on gypsum, apply two coatings.

If deck is composed of precast units, the primer and asphalt shall be omitted 4″ each side of all joints.

Lay one thickness of the base felt, lapping the sheets 2″, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 6″ centers through the laps and at 18″ centers through the longitudinal center of each sheet in two lines spaced 10″ apart, the nails to be staggered.

Over the base felt, lay one ply of the waterproofing fabric, lapping each sheet 3″ and mopping the full width under each with the asphalt waterproofing cement.

Over the waterproofing fabric, lay two plies of the 15 or 20-lb. felt, lapping each sheet 17″ over the preceding one, mopping the full width under each with the asphalt waterproofing cement and, if roofing construction permits, nailing at 9″ centers adjacent to the back edge.

Coat the entire surface with not less than 25 lbs. of the asphalt waterproofing cement per 100 sq. ft.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

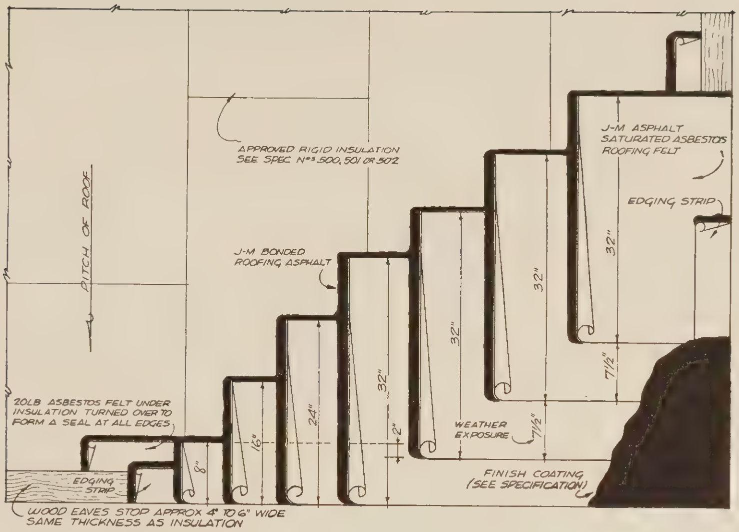
(If a bond is required, add the following:)

GUARANTEE

(Copy from Specification No. 203, above.)

SPECIFICATION No. 125

J-M 20-YEAR ROOF OVER INSULATION ON ANY TYPE OF DECK


APPROVED RIGID INSULATION
SEE SPEC Nos 500, 501 OR 502
J-M ASPHALT SATURATED ASBESTOS ROOFING FELT
EDGING STRIP
PITCH OF ROOF
J-M BONDED ROOFING ASPHALT
32"
32"
32"
32"
24"
16"
8"
2"
7½"
7½"
20LB ASBESTOS FELT UNDER INSULATION TURNED OVER TO FORM A SEAL AT ALL EDGES
WEATHER EXPOSURE
EDGING STRIP
FINISH COATING (SEE SPECIFICATION)
WOOD EAVES STOP APPROX 4" TO 6" WIDE SAME THICKNESS AS INSULATION

Surface: SMOOTH

Felts: ASBESTOS

Waterproofing: ASPHALT

Insulation: J-M ROOF INSULATION

Inclines: ½ in. to 6 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 4 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt....................	60 or 80 lb.
ASPHALT: J-M Bonded Roofing Asphalt	
For mopping between felts..................................	100 lb.
For mopping felt to deck..................................	30 lb.
(See also specification for application of insulation.)	
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—The roof felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. The felt applied under insulation shall be similarly turned up a distance 6″ greater than the thickness of such insulation and shall overhang all roof edges a similar amount. All nails shall be driven through flat metal disks.

Insulation—*(Copy from J-M Standard Specification: No. 500, over wood; No. 501, over non-combustible (except steel); No. 502, over steel deck. See pages 23 and 24.)*

Roofing—Lay four plies of the 15 or 20-lb. felt, lapping each sheet 24½″ over the preceding one, mopping the full width under each with the asphalt and, if pitch of roof exceeds 3″ to the foot, and roof construction permits, nailing at 9″ centers adjacent to the back edge. With nailing strips provided as required, nail each sheet at each nailing strip, all nails to be placed so as to be covered by not less than two plies of felt.

Coat the entire surface with roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

SPECIFICATION No. 126

J-M 15-YEAR ROOF OVER INSULATION ON ANY TYPE OF DECK

Surface: SMOOTH Felts: ASBESTOS

Waterproofing: ASPHALT

Insulation: J-M ROOF INSULATION

Inclines: ½ in. to 6 inches per foot

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 3 layers of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt....................	45 or 60 lb.
ASPHALT: J-M Bonded Roofing Asphalt	
For mopping between felts..................................	100 lb.
For mopping felt to deck..................................	30 lb.
(See also specification for application of insulation.)	
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

(Copy from Specification No. 125, above.)

INSTALLATION

General—*(Copy from Specification No. 125, above.)*

Insulation—*(Copy from Specification No. 125, above.)*

Roofing—Lay three plies of the 15 or 20-lb. felt, lapping each sheet 22″ over the preceding one, mopping the full width, *etc.* . . . *(Follow with remainder of paragraph from Specification No. 125, above.)*

Coat the entire surface with roof coating.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

(If a bond is required, add the following:)

GUARANTEE

(Copy from Specification No. 125, above, except change to "Fifteen-Year".*)*

Built-up Roofs for FLAT Decks

In serving the practical purpose of protecting the interior of a building from the weather, the primary function of a roof is to shed water. Yet the economy, simplicity and architectural advantages of the flat roof deck make this a very common type of construction for industrial and commercial buildings, apartment houses and similar structures. Involving, as it does, limited drainage possibilities, the built-up roof for flat-deck construction must be selected with special care.

The most important problem associated with flat-deck roofs is the prolonged contact of the roof with water. On roofs where sufficient slope is provided, the roof is dry soon after the rain has ceased or the snow melted. But, on flat-deck roofs, poor drainage and low spots from building settlement, and other causes, often permit the water to remain in stagnant pools, until it has evaporated.

Extensive research and field study of the effects of such conditions on waterproofing materials has conclusively proved that coal tar pitch combined with asbestos roofing felts is the most suitable for resistance to this exposure. However, coal tar pitch must be shielded from the sun by a layer of gravel or slag if it is to retain its effectiveness.

On the basis of these conclusions, Johns-Manville has developed the following specifications for flat-deck roofs, utilizing gravel or slag-covered roofs built-up with tar-saturated asbestos roofing felts and coal tar pitch.

SPECIFICATION No. 600*

J-M 20-YEAR ROOF OVER WOOD OR PRE-CAST GYPSUM DECKS

Surface: SLAG or GRAVEL
Felts: ASBESTOS
Waterproofing: PITCH (COAL TAR)
Inclines: Not to exceed 2 inches per foot

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 700

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

BILL OF MATERIALS PER 100 SQ. FT.

SHEATHING PAPER (used on wood deck only): 1 layer (5 lb. per 100 sq. ft.)	5 lb.
***FELTS:** 5 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	81 lb.
PITCH: J-M Bonded Roofing Pitch	150 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

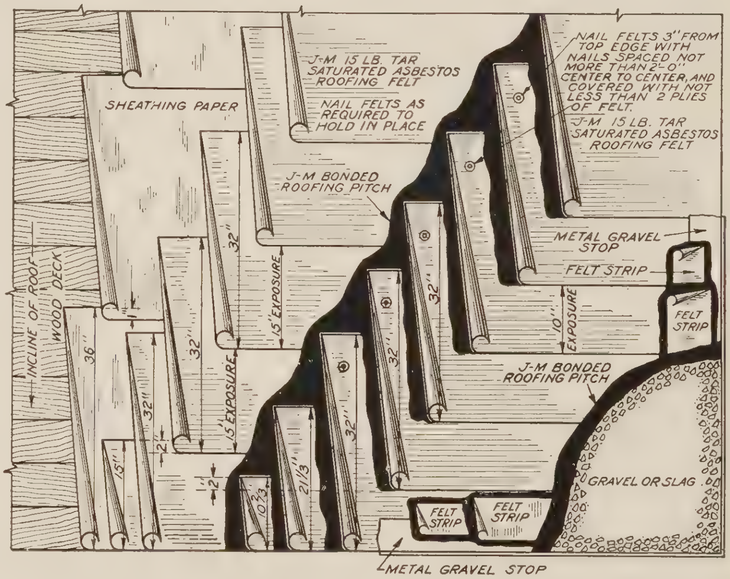
ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.


NAIL FELTS 3″ FROM TOP EDGE WITH NAILS SPACED NOT MORE THAN 2′-0″ CENTER TO CENTER, AND COVERED WITH NOT LESS THAN 2 PLIES OF FELT.
J-M 15 LB. TAR SATURATED ASBESTOS ROOFING FELT
SHEATHING PAPER
J-M 15 LB. TAR SATURATED ASBESTOS ROOFING FELT
NAIL FELTS AS REQUIRED TO HOLD IN PLACE
J-M BONDED ROOFING PITCH
METAL GRAVEL STOP
FELT STRIP
FELT STRIP
INCLINE OF ROOF
WOOD DECK
36″
32″
15″
2″
32″
32″
15″ EXPOSURE
15″ EXPOSURE
2″
10⅔″
21⅓″
32″
32″
32″
32″
10″ EXPOSURE
J-M BONDED ROOFING PITCH
GRAVEL OR SLAG
FELT STRIP
FELT STRIP
METAL GRAVEL STOP

Roofing—If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1″.

Lay two plies of the felt, lapping each sheet 17″ over the preceding one and nailing sufficiently to hold in place.

Over these felts lay three additional plies of the felt, lapping each sheet 22″ over the preceding one, mopping the full width under each with the pitch and nailing at 24″ centers, adjacent to the back edge.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel, or 300 lbs. of slag, for each 100 sq. ft. of roof surface.

Flashing—(*Copy from J-M Standard Specification for Flashing, page 26.*)

(*If a bond is required, add the following:*)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

SPECIFICATION No. 604*

J-M 15-YEAR ROOF OVER WOOD OR PRE-CAST GYPSUM DECKS

Surface: SLAG or GRAVEL

Felts: ASBESTOS

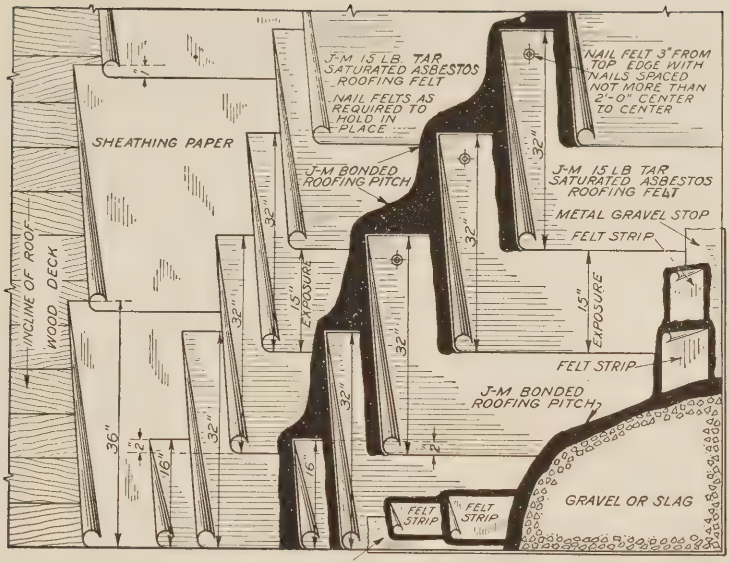
Waterproofing: PITCH (COAL TAR)

Inclines: Not to exceed 2 inches per foot

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 704

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")


J-M 15 LB. TAR SATURATED ASBESTOS ROOFING FELT
NAIL FELTS AS REQUIRED TO HOLD IN PLACE
NAIL FELT 3" FROM TOP EDGE WITH NAILS SPACED NOT MORE THAN 2'-0" CENTER TO CENTER
SHEATHING PAPER
J-M BONDED ROOFING PITCH
J-M 15 LB TAR SATURATED ASBESTOS ROOFING FELT
METAL GRAVEL STOP
FELT STRIP
INCLINE OF ROOF
WOOD DECK
32"
15" EXPOSURE
FELT STRIP
J-M BONDED ROOFING PITCH
36"
2"
16"
FELT STRIP
FELT STRIP
GRAVEL OR SLAG
METAL GRAVEL STOP

BILL OF MATERIALS PER 100 SQ. FT.

SHEATHING PAPER (used on wood deck only): 1 layer (5 lb. per 100 sq. ft.)	5 lb.
***FELTS:** 4 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	65 lb.
PITCH: J-M Bonded Roofing Pitch	125 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1".

Lay two plies of the felt, lapping each sheet 17" over the preceding one and nailing sufficiently to hold in place.

Over these felts lay two additional plies of the felt, lapping each sheet 17" over the preceding one, mopping the full width under each with the pitch and nailing at 24" centers, adjacent to the back edge.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel, or 300 lbs. of slag, for each 100 sq. ft. of roof surface.

Flashing—(*Copy from J-M Standard Specification for Flashing, page 26.*)

(*If a bond is required, add the following:*)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

SPECIFICATION No. 601*

J-M 10-YEAR ROOF OVER WOOD OR PRE-CAST GYPSUM DECKS

Surface: SLAG Waterproofing: PITCH (COAL TAR)

Felts: ASBESTOS Inclines: 2 in. to 6 in. per ft.

BILL OF MATERIALS PER 100 SQ. FT.

SHEATHING PAPER (used on wood deck only): 1 layer (5 lb. per 100 sq. ft.)	5 lb.
***FELTS:** 5 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	81 lb.
PITCH: J-M Bonded Roofing Pitch (for mopping between felts)	80 lb.
ASPHALT: J-M Bonded Roofing Asphalt (for top surfacing)	45 lb.
SURFACING: Slag	250 lb.

ROOF DECK

(*Copy from Specification No. 604, above.*)

INSTALLATION

General—(*copy from Specification No. 604, above.*)

Roofing—If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1".

Lay five plies of the felt, lapping each sheet 26" over the preceding one, mopping under each with the pitch to a width of 22" starting 2" from the exposed edge. Nail each sheet at 12" centers, 8" from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(*Copy from J-M Standard Specification for Flashing, page 26.*)

(*If a bond is required, add the following:*)

GUARANTEE

(*Copy from Specification No. 604, above, except change to* "Ten-Year.")

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 701

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

SPECIFICATION No. 602*

J-M 20-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

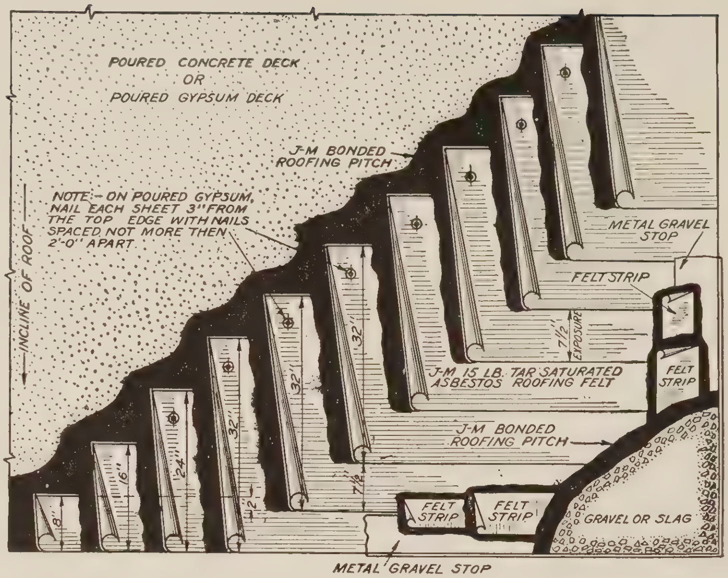
(except precast gypsum or steel)

Surface: SLAG or GRAVEL

Felts: ASBESTOS

Waterproofing: PITCH (COAL TAR)

Inclines: Not to exceed 2 inches per foot†



*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 702

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

BILL OF MATERIALS PER 100 SQ. FT.

***FELTS:** 4 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	65 lb.
PITCH: J-M Bonded Roofing Pitch	200 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks. If incline exceeds 1" to one foot, the roof deck shall permit nailing, or nailing strips shall be provided.

Insulation—*(If involved, copy from J-M Standard Specification: No. 1000, over wood; No. 1001, over non-combustible (except steel); No. 1002, over steel deck.)*

Roofing—Lay four plies of the felt, lapping each sheet 24½" over the preceding one, mopping the full width under each with the pitch.

†If incline exceeds 1" to one foot, the felts shall be nailed adjacent to the upper edge and so that all nails shall be covered by not less than three layers of felt.

If roof construction is of precast units, the pitch applied to the roof surface shall be omitted for a width of 4" each side of all joints between the units.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel, or 300 lbs. of slag, for each 100 sq. ft. of roof surface.

Flashing—*(Copy from J-M Standard Specification for Flashing, page 26.)*

*(If a bond** is required, add the following:)*

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

**The bond will not cover the roof insulation.

SPECIFICATION No. 605*

J-M 15-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

(except precast gypsum or steel)

Surface: SLAG or GRAVEL

Felts: ASBESTOS

Waterproofing: PITCH (COAL TAR)

Inclines: Not to exceed 2 inches per foot†

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 705

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

BILL OF MATERIALS PER 100 SQ. FT.

***FELTS:** 3 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	49 lb.
PITCH: J-M Bonded Roofing Pitch	175 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

ROOF DECK

(*Copy from Specification No. 602, above.*)

INSTALLATION

General—(*Copy from Specification No. 602, above*).

Insulation—*(Copy from Specification No. 602, above.)*

Roofing—Lay three plies of the felt, lapping each sheet 22" over the preceding one, mopping the full width under each with the pitch. *(Follow with remainder of this paragraph and the two following paragraphs from Specification No. 602, above.)*

Flashing—(*Copy from J-M Standard Specification for Flashing, page 26.*)

*(If a bond** is required, add the following:)*

GUARANTEE

(*Copy from Specification No. 602, above, except change to* "Fifteen-Year.")

**The bond will not cover the roof insulation.

SPECIFICATION No. 603*

J-M 10-YEAR ROOF OVER NON-COMBUSTIBLE DECKS

(except precast gypsum or steel)

Surface: SLAG
Felts: ASBESTOS
Waterproofing: PITCH (TAR)
Inclines: 2 in. to 6 inches per foot

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 703

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

BILL OF MATERIALS PER 100 SQ. FT.

***FELTS:** 4 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	65 lb.
PITCH: J-M Bonded Roofing Pitch (for mopping between felts)	100 lb.
ASPHALT: J-M Bonded Roofing Asphalt (for top surfacing)	45 lb.
SURFACING: Slag	250 lb.

ROOF DECK

(*Copy from Specification No. 602, opposite.*)

INSTALLATION

General—All roofing felts shall be turned up 2″ on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks. If roof deck does not permit nailing, wood nailing strips shall be provided.

Insulation—*(If involved, copy from J-M Standard Specification: No. 1000, over wood; No. 1001, over non-combustible (except steel); No. 1002, over steel deck.)*

Roofing—Lay four plies of the felt, lapping each sheet 24½″ over the preceding one, mopping under each with the pitch to a width of 22½″, starting 2″ from the exposed edge.

If roof construction is of precast units, the pitch applied to the roof surface shall be omitted for a width of 4″ each side of all joints between the units.

If roof construction permits, nail each sheet at 12″ centers, 8″ from the back edge. With nailing strips provided as required, nail each sheet at each nailing strip with two nails spaced 6″ and 8″ respectively from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(*Copy from J-M Standard Specification for Flashing, page 26.)*

(*If a bond is required, add the following:*)

GUARANTEE

(*Copy from Specification No. 602, opposite, except change to* "Ten-Year".)

SPECIFICATION No. 612*

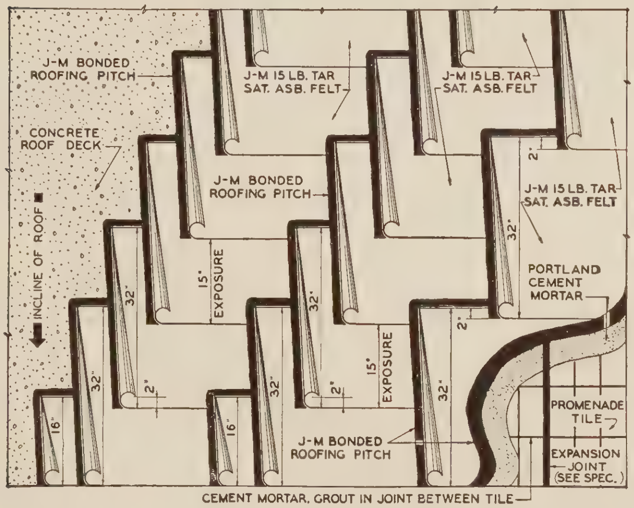
J-M BUILT-UP ROOF UNDER PROMENADE TILE OVER CONCRETE DECKS

Surface: SMOOTH
Felts: ASBESTOS
Waterproofing: PITCH (COAL TAR)
Inclines: Not to exceed 1 inch per foot

*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 712

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")



CEMENT MORTAR, GROUT IN JOINT BETWEEN TILE

BILL OF MATERIALS PER 100 SQ. FT.

***FELTS:** 5 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	81 lb.
PITCH: J-M Bonded Roofing Pitch	200 lb.
FLASHING: Copper.	
SURFACING: 6″ x 9″ x 1″ Promenade Tile.	

ROOF DECK

General—(*Copy from Specification No. 602, opposite.*)

INSTALLATION

General—(*Copy from Specification No. 602, opposite.*)

Roofing—Lay two plies of the felt, lapping each sheet 17″ over the preceding one and mopping the full width under each with the pitch. Then apply two additional layers of the felt, lapping each sheet 17″ over the preceding one and mopping the full width under each with the pitch.

Immediately preceding the laying of the tile, throughly clean the roof surface and lay one additional ply of the felt, lapping each sheet 2″ over the preceding one and mopping the full width under each with the pitch. Then coat the entire surface with pitch. No more of the roof surface shall be covered with this last ply of felt and pitch than can be immediately covered with the tile.

Promenade Tile—Lay the promenade tile in a bedding of portland cement mortar not less than 1″ thick, with expansion joints in both directions on 20 ft. centers, and also at all walls, curbs and other vertical surfaces. Expansion joints shall be not less than 1″ wide and shall extend through the tile and cement bed to the roofing, and shall be filled with J-M Expansion Joint Filler. All joints between the tile, other than expansion joints, shall be grouted with portland cement mortar.

Flashing—All flashing shall be of sheet metal.

(*If a bond is required, consult Johns-Manville.*)

SPECIFICATION No. 613

J-M 10-YEAR ROOF OVER CONCRETE DECK FOR SPRAY POND

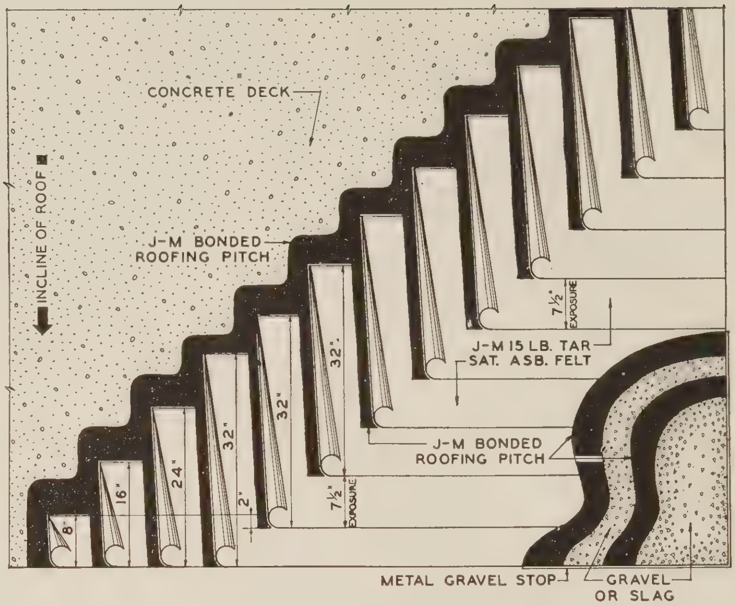
(DOUBLE SURFACING)

Surface: SLAG or GRAVEL

Felts: ASBESTOS

Waterproofing: PITCH (COAL TAR)

Inclines: Not to exceed ½ inch per foot



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*A built-up roof of this same construction is available, differing only in the use of rag instead of asbestos felt. To specify, make following changes:

SPECIFICATION NO. 713

FELTS: (*Change name of felt to* "J-M 15-lb. Bonded Tar-Saturated Rag Felt.")

BILL OF MATERIALS PER 100 SQ. FT.

***FELTS:** 4 layers of J-M 15-lb. Tar-Saturated Asbestos Roofing Felt (16¼ lb. per 108 sq. ft.)	65 lb.
PITCH: J-M Bonded Roofing Pitch	300 lb.
SURFACING: Gravel (see specification)	700 lb.
or Slag (see specification)	500 lb.

DECK

(a) Deck construction, including cants, coves or fillets, shall be properly graded to drains, leaving all surfaces smooth, clean, sound and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay four plies of the 15-lb. felt, lapping each sheet 24½" over the preceding one and mopping the full width under each with the pitch.

Surfacing—Immediately preceding the application of surfacing material, thoroughly clean the roof surface, pour a uniform coating of the pitch and embed in it, while hot, not less than 400 lbs. of gravel, or 300 lbs. of slag, for each 100 sq. ft. of roof surface.

Remove all loose or excess gravel or slag by lightly sweeping all surfaces and immediately pour another uniform coating of pitch into which, while hot, embed not less than 300 lbs. of gravel, or 200 lbs. of slag, for each 100 sq. ft. of roof surface. All particles shall be firmly embedded so that there shall be no loose particles in the finished job. The surface shall be lightly rolled, if necessary, to accomplish this.

(If a bond is required, consult Johns-Manville.)

The importance of using ASBESTOS felts over FLAT roof decks

Over flat decks, the use of tar saturated asbestos felts covered with slag or gravel is the ultimate assurance of roof permanence. Because of their inorganic composition, asbestos felts are immune to the destructive forces of rot and decay. They preserve the Bonded Roofing Pitch between the plies in practically its original condition. Asbestos roofs stay waterproof for years, with minimum upkeep.

Constant exposure to the elements (in particular the action of ice and snow) will often cause the covering of slag or gravel on a flat roof to become partly carried away, exposing the pitch and felt to the sun. When this happens the essential waterproofing oils of the bitumen may soon be leached out. If the felt is asbestos felt, however, *only the surface pitch will be attacked* to any serious degree. The bitumen embedded in the non-capillary fibres of the asbestos felt will yield only after long periods of exposure to severe conditions.

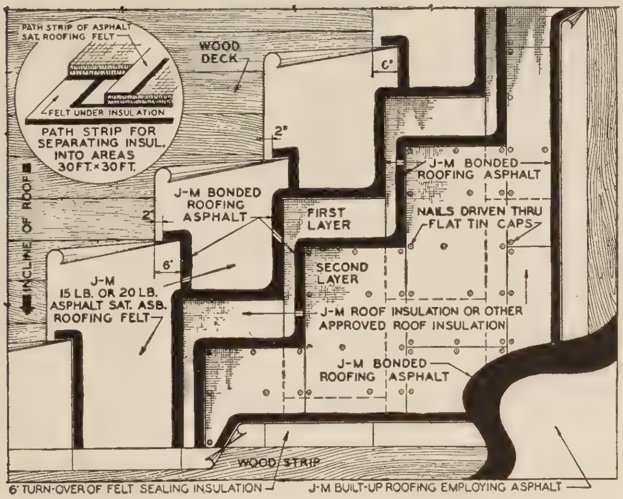
J-M ROOF INSULATION SPECIFICATIONS

SPECIFICATION No. 500

J-M
ROOF INSULATION
ON WOOD DECKS
TO BE OVERLAID
WITH A J-M ASPHALT
BUILT-UP ROOF

BILL OF MATERIALS PER 100 SQ. FT.

FELT (under insulation): 1 layer of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	15 or 20 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*) For each layer of insulation	100 sq. ft.
ASPHALT: J-M Bonded Roofing Asphalt For mopping felt	30 lb.
For mopping each layer of insulation	40 lb.


PATH STRIP OF ASPHALT SAT. ROOFING FELT
FELT UNDER INSULATION
PATH STRIP FOR SEPARATING INSUL. INTO AREAS 30 FT. × 30 FT.
WOOD DECK
6"
2"
2"
6"
INCLINE OF ROOF
J-M BONDED ROOFING ASPHALT
FIRST LAYER
SECOND LAYER
J-M 15 LB. OR 20 LB. ASPHALT SAT. ASB. ROOFING FELT
J-M BONDED ROOFING ASPHALT
NAILS DRIVEN THRU FLAT TIN CAPS
J-M ROOF INSULATION OR OTHER APPROVED ROOF INSULATION
J-M BONDED ROOFING ASPHALT
WOOD STRIP
6" TURN-OVER OF FELT SEALING INSULATION
J-M BUILT-UP ROOFING EMPLOYING ASPHALT

ROOF DECK

As J-M Roof Insulation is designed to receive built-up roofing directly over it, the following specification has been prepared to be appended to certain Standard Specifications for J-M Asphalt Built-up Roofs, as given on previous pages. The roof deck, before being considered satisfactory to receive the insulation, shall be in the condition outlined in the pertinent built-up roof specification.

INSULATION

(a) Lay one ply of the felt, lapping the sheets 6", mopping in the laps with the asphalt and nailing sufficiently to hold in place. This felt shall be turned up on, but not cemented to, all vertical surfaces to a height 6" greater than the thickness of the insulation and shall overhang all roof edges a similar amount.

(b) Lay the insulation with all end joints broken, mopping the full width under each sheet with the asphalt. The edges of the sheets at the joints shall be thoroughly sealed with the asphalt.

(c) The insulation shall be isolated into areas approximately 30 ft. square by path-strippings of one ply of the felt mopped the full width with the asphalt, to extend not less than 4" over the edge of the insulation in place and not less than 4" under the adjoining insulation to be laid.

Nailing—Each sheet of the insulation shall be nailed at 12" centers, adjacent to the longitudinal edges and staggered through the longitudinal center. If it be applied in more than one layer, succeeding layers shall be applied in the same manner as the first layer, the sheets of each layer to break joints with those of the preceding layer, with all nailing done through the top layer.

Sealing—The upturned felt at vertical surfaces and roof edges shall be turned down and mopped solidly to the insulation.

PROTECTION

Insulation shall not be left exposed to the weather. No more insulation shall be laid than can be completely covered with the roofing felts on the same day. At the end of the day's work, roofing felts shall be turned down over the exposed edges of the insulation and mopped solidly.

SPECIFICATION No. 502

J-M
ROOF INSULATION
ON STEEL DECKS
TO BE OVERLAID
WITH A J-M ASPHALT
BUILT-UP ROOF

Minimum Pitch: ½ inch per foot

BILL OF MATERIALS PER 100 SQ. FT.

FELT (under insulation); 1 layer of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	15 or 20 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*) For each layer of insulation	100 sq. ft.
PRIMER (unless steel deck has been shop-coated): J-M Concrete Primer (8 lb. per gal.)	1 gal.
ASPHALT: J-M Bonded Roofing Asphalt For mopping felts	30 lb.
For mopping each layer of insulation	40 lb.

ROOF DECK

(*Copy from Specification No. 500, above.*)

INSULATION

(a) If the steel deck has not been shop-coated with asphalt paint, or if such coating is incomplete or has been damaged, the entire deck or such uncoated areas shall be painted with the primer and allowed to dry.

(b) Lay one ply of the felt, lapping the sheets 6" and mopping the full width under each with the asphalt. This felt shall be turned up on, but not cemented to, all vertical surfaces to a height 6" greater than the thickness of the insulation and shall overhang all roof edges a similar amount.

(c) (*Copy paragraph* (*b*) *of Specification No. 500, above.*)

(d) (*Copy paragraph* (*c*) *of Specification No. 500, above.*)

SECURING OF INSULATION

If the incline of the roof deck exceeds 3" per foot, wood nailing strips, of the same thickness as the insulation and approximately 4" wide, shall be provided and the insulation shall be secured with not less than 5 steel darts or other approved fasteners per sheet. *(Follow with the second sentence under* "Nailing" *in Specification 500, changing word* "nailing" *to* "fastening."*)*

SEALING AND PROTECTION

(Copy respective paragraphs of Specification No. 500, above.)

SPECIFICATION No. 501

J-M ROOF INSULATION ON NON-COMBUSTIBLE DECKS TO BE OVERLAID WITH A J-M ASPHALT BUILT-UP ROOF

BILL OF MATERIALS PER 100 SQ. FT.

FELT (under insulation): 1 layer of J-M 15-lb. Perforated Asbestos Felt or 20-lb. Asphalt-Saturated Asbestos Roofing Felt	15 or 20 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*)	
For each layer of insulation	100 sq. ft.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
ASPHALT: J-M Bonded Roofing Asphalt	
For mopping each layer of insulation	30 lb.

ROOF DECK

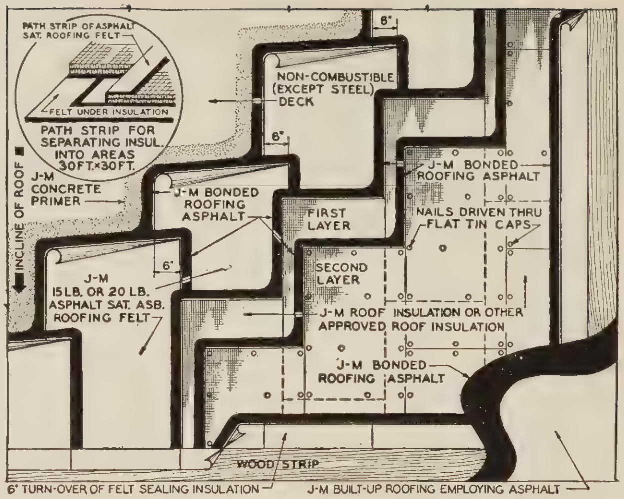
(Copy from Specification No. 1001 below.)

INSULATION

(a) Coat all surfaces which are to receive the insulation with the asphalt primer and allow to dry.

If deck is composed of precast units, the primer and asphalt shall be omitted 4″ each side of all joints between the units.

(b) *(Copy paragraph (b) of Specification No. 502, on previous page.)*


PATH STRIP OF ASPHALT SAT. ROOFING FELT
FELT UNDER INSULATION
PATH STRIP FOR SEPARATING INSUL. INTO AREAS 30FT.×30FT.
INCLINE OF ROOF
J-M CONCRETE PRIMER
NON-COMBUSTIBLE (EXCEPT STEEL) DECK
6"
6"
6"
J-M BONDED ROOFING ASPHALT
J-M BONDED ROOFING ASPHALT
FIRST LAYER
NAILS DRIVEN THRU FLAT TIN CAPS
SECOND LAYER
J-M 15 LB. OR 20 LB. ASPHALT SAT. ASB. ROOFING FELT
J-M ROOF INSULATION OR OTHER APPROVED ROOF INSULATION
J-M BONDED ROOFING ASPHALT
WOOD STRIP
6" TURN-OVER OF FELT SEALING INSULATION
J-M BUILT-UP ROOFING EMPLOYING ASPHALT

(c) (*Copy paragraph (b) of Specification No. 500, on previous page.*)

(d) (*Copy paragraph (c) of Specification No. 500, on previous page.*)

Nailing—If roof construction permits, nail each sheet at 12″ centers adjacent to the longitudinal edges and staggered through the longitudinal center. With nailing strips provided as required, each sheet shall be nailed at each strip at 12″ centers.

Sealing—(*Copy from Specification No. 500, on previous page.*)

PROTECTION

(*Copy from Specification No. 500, on previous page.*)

SPECIFICATION No. 1001

J-M ROOF INSULATION ON NON-COMBUSTIBLE DECKS TO BE OVERLAID WITH A J-M BUILT-UP ROOF USING COAL TAR PITCH

BILL OF MATERIALS PER 100 SQ. FT.

FELT (under insulation): 1 layer of J-M 15-lb. Tar-Saturated Felt (same as used in roofing over insulation)	15 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*)	
For each layer of insulation	100 sq. ft.
PRIMER: J-M Concrete Primer (8 lb. per gal.)	
Over concrete	1 gal.
Over gypsum	1½ to 2 gal.
PITCH: J-M Bonded Roofing Pitch	
For mopping felt	30 lb.
For mopping each layer of insulation	40 lb.

ROOF DECK

As J-M Roof Insulation is designed to receive built-up roofing directly over it, the following specification has been prepared to be appended to certain Standard Specifications for J-M Asphalt Built-up Roof, as given on previous pages. The roof deck, before being considered satisfactory to receive the insulation, shall be in the condition outlined in the pertinent built-up roof specification.

General—(a) A wood strip of the same thickness as the insulation and approximately 4″ wide shall be provided, secured to the roof deck adjoining all eaves, to act as a stop for the insulation.

(b) If incline exceeds 1″ to one foot, the roof deck shall permit nailing or wood nailing strips shall be provided.

Felt Under Insulation—If application is over gypsum, coat all surfaces which are to receive the roofing with the primer and allow to dry. Lay one ply of the felt, lapping the sheets 6″ and mopping the full width under each with the pitch.

This felt shall be turned up on, but not cemented to, all vertical surfaces to a height 6″ greater than the thickness of the insulation and shall overhang all roof edges a similar amount.

If roof construction is of precast units, the primer and pitch shall be omitted for a width of 4″ each side of all joints between the units.

INSULATION

Insulation—Lay the insulation with all end joints broken, mopping the full-width under each sheet with the pitch. The edges of the sheets at the joints shall be thoroughly sealed with the pitch. The insulation shall be isolated into areas approximately 30′ square by path-strippings of one ply of the felt, mopped the full width with the pitch, to extend not less than 4″ over the edge of the insulation in place and not less than 4″ under the adjoining insulation to be laid.

Nailing—(a) If roof construction permits, nail each sheet of the insulation at 12″ centers adjacent to the longitudinal edges and staggered through the longitudinal center. With wood nailing strips provided as required, nail each sheet at each nailing strip at 12″ centers.

(b) If to be applied in more than one layer, succeeding layers shall be applied in the same manner as the first layer, the sheets of each layer to break joints with those of the preceding layer, with all nailing done through the top layer.

Sealing—The up-turned felt at vertical surfaces and the overhanging felt at roof edges shall be turned down and mopped solidly to the Roofinsul.

PROTECTION

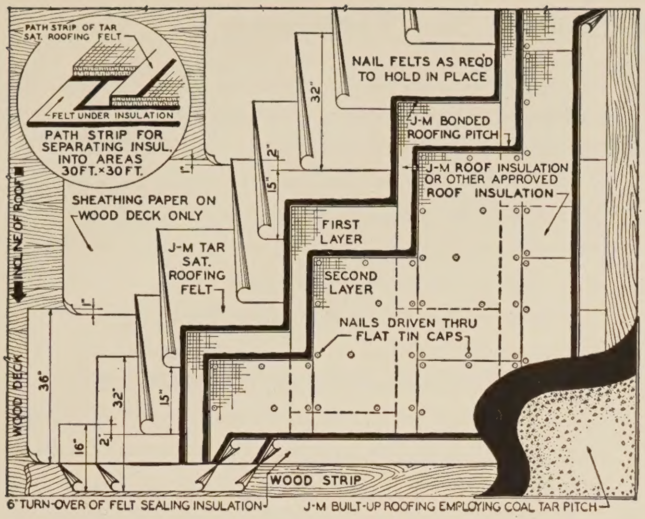
Insulation shall not be left exposed to the weather. No more insulation shall be laid than can be completely covered with the roofing felts on the same day. At the end of the day's work, roofing felts shall be turned down over the exposed edges of the insulation and mopped solidly.

SPECIFICATION No. 1000

J-M ROOF INSULATION
ON WOOD OR PRECAST GYPSUM DECKS
TO BE OVERLAID WITH A J-M BUILT-UP ROOF USING COAL TAR PITCH

BILL OF MATERIALS PER 100 SQ. FT.

SHEATHING PAPER: (over wood deck only): 1 layer (5 lb. per 100 sq. ft.)	5 lb.
FELTS (under insulation): 2 layers of J-M 15-lb. Tar-Saturated Felt (Same as used in roofing over insulation.)	30 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*) For each layer of insulation	100 sq. ft.
PITCH: J-M Bonded Roofing Pitch For mopping each layer of insulation	40 lb.


PATH STRIP OF TAR SAT. ROOFING FELT
FELT UNDER INSULATION
PATH STRIP FOR SEPARATING INSUL. INTO AREAS 30 FT.×30 FT.
INCLINE OF ROOF
SHEATHING PAPER ON WOOD DECK ONLY
J-M TAR SAT. ROOFING FELT
NAIL FELTS AS REQ'D TO HOLD IN PLACE
J-M BONDED ROOFING PITCH
J-M ROOF INSULATION OR OTHER APPROVED ROOF INSULATION
FIRST LAYER
SECOND LAYER
NAILS DRIVEN THRU FLAT TIN CAPS
32"
2"
15"
1"
36"
32"
15"
16"
2"
WOOD DECK
WOOD STRIP
6" TURN-OVER OF FELT SEALING INSULATION
J-M BUILT-UP ROOFING EMPLOYING COAL TAR PITCH

ROOF DECK

(Copy from Specification No. 1001, on opposite page.)

INSULATION

General—*(Copy paragraph (a) of Specification No. 1001.)*

The felts applied under the insulation shall be turned up on, but not cemented to, all vertical surfaces to a height 6″ greater than the thickness of the insulation and shall over-hang all roof edges a similar amount.

Felts Under Insulation—If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1″.

Lay two plies of the felt, lapping each sheet 17″ over the preceding one and nailing sufficiently to hold in place.

Insulation *(Copy from Specification No. 1001, opposite.)*

Nailing—Nail each sheet of the insulation at 12″ centers adjacent to the longitudinal edges and staggered through the longitudinal center.

(Continue with paragraph (b) of Specification No. 1001.)

Sealing—*(Copy from Specification No. 1001, on opposite page.)*

PROTECTION

(Copy from Specification No. 1001, on opposite page.)

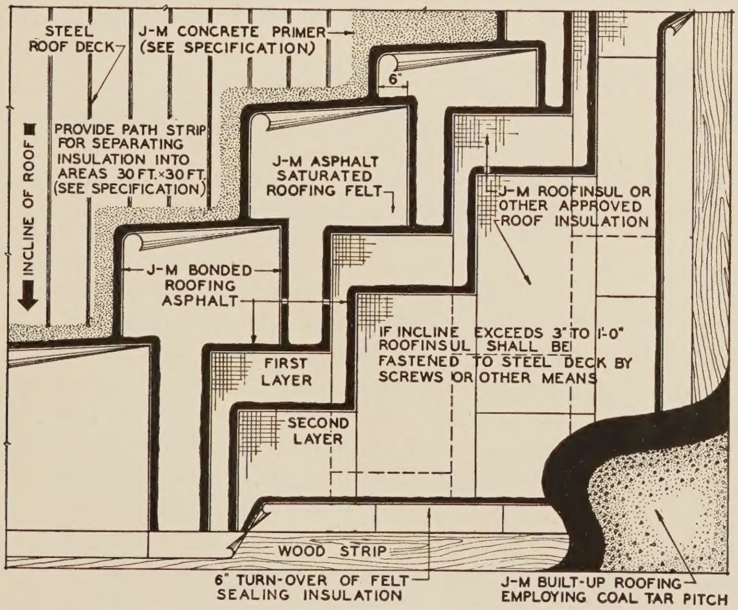
SPECIFICATION No. 1002

J-M ROOF INSULATION
ON STEEL DECKS
TO BE OVERLAID WITH A J-M BUILT-UP ROOF USING COAL TAR PITCH

Minimum Pitch: ½ inch per foot

BILL OF MATERIALS PER 100 SQ. FT.

FELT (under insulation): 1 layer of J-M 15-lb. Asphalt-Saturated Felt (Same as used in roofing over insulation.)	15 lb.
INSULATION: J-M Roof Insulation (*state kind and thickness*) For each layer of insulation	100 sq. ft.
PRIMER: (Unless steel deck has been shop-coated): J-M Concrete Primer (8 lbs. per gal.)	1 gal.
ASPHALT: J-M Bonded Roofing Asphalt	
For mopping felt	30 lb.
For mopping each layer of insulation	40 lb.


STEEL ROOF DECK
J-M CONCRETE PRIMER (SEE SPECIFICATION)
6"
INCLINE OF ROOF
PROVIDE PATH STRIP FOR SEPARATING INSULATION INTO AREAS 30 FT.×30 FT. (SEE SPECIFICATION)
J-M ASPHALT SATURATED ROOFING FELT
J-M ROOFINSUL OR OTHER APPROVED ROOF INSULATION
J-M BONDED ROOFING ASPHALT
IF INCLINE EXCEEDS 3" TO 1'-0" ROOFINSUL SHALL BE FASTENED TO STEEL DECK BY SCREWS OR OTHER MEANS
FIRST LAYER
SECOND LAYER
WOOD STRIP
6" TURN-OVER OF FELT SEALING INSULATION
J-M BUILT-UP ROOFING EMPLOYING COAL TAR PITCH

ROOF DECK

(Copy from Specification No. 1001, on opposite page.)

INSULATION

General—(a) *(Copy paragraph (a) of Specification No. 502, on previous page.)*

(b) *(Copy paragraph (a) of Specification No. 1001, on opposite page.)*

Felt Under Insulation—Lay one ply of the felt, lapping each sheet 6″ over the preceding one and mopping the full width under each with the asphalt.

(Copy third paragraph under this head in Specification No. 1001, opposite.)

Insulation—*(Copy from Specification No. 1001, opposite.)*

SECURING OF INSULATION

(Copy from Specification No. 502, on previous page.)

SEALING AND PROTECTION

(Copy from Specification No. 1001, on opposite page.)

The critical part of a roof is the Flashing

MORE than at any other place on a roof, a leak is apt to occur at the junction formed by the roof deck and a vertical surface, such as a parapet wall, skylight curb or wall of an adjacent building. Most roof decks are separate units from these vertical surfaces and are constructed of different materials. There is a natural weakness at the angle, due to shrinkage of the material, expansion or contraction, or other movement of the building. Also, the wall absorbs a certain amount of moisture. For this reason it is most desirable that the flashing should go all the way through the wall. This method isolates the roof deck and keeps water from seeping down through the wall and under the roofing.

Johns-Manville has designed several types of flashing so that any of the different conditions encountered in a roof can be handled successfully. In designing these flashings, the application of roofing and flashing have definitely been made two separate operations.

Before any work is done, a cant strip, a "V"-shaped piece of lumber, should be installed in the angle formed by the roof and the vertical surface, so that instead of a sharp angle there is formed a gradual slope.

Johns-Manville Asbestos Flashing Felts are made from the same basic materials as the asbestos roofing felts. The waterproofing or cementing agent is Johns-Manville Asbestile, a heavy-bodied, plastic cement composed of asbestos fibres, asphalt and other mineral ingredients, which hardens after application and *becomes a part of the wall itself.*

J-M ASBESTILE FLASHING SYSTEM (10-YEAR BOND)

Johns-Manville Flashing may be installed to cover completely the top and inside face of parapet walls, to extend through walls, or to extend not less than 8″ high on the inside face only. J-M Flashing may also be used with a sheet metal cap flashing built into the walls, or it may be used in conjunction with raggle blocks. As Johns-Manville Flashing is used only in connection with Johns-Manville Built-up Roofing, the following specification has been prepared to be appended to the Standard Specifications for such Built-up Roofs:

The height of flashing on parapet walls shall be (*state whether "not less than 8"" or "so as to cover completely entire inside face of wall and top of wall under coping to within 2" of outside face" or "not less than 8" with cap flashing built into and extended through wall to form a dampproof course." If flashing is to be carried into raggle block, so state.*)

The height of flashing on high walls shall be (*state whether "same height as on adjoining parapet walls" or "not less than 8", with cap flashing built into and extended through wall to form a dampproof course."*)

All masonry surfaces which are to receive the base or cap flashing shall be coated with J-M Concrete Primer and allowed to dry.

BASE FLASHING SPECIFICATION *(See drawings on next page.)*

Lay one thickness of the 15-lb., or 20-lb. roofing felt to extend not less than 6″ high on the vertical surface to be flashed, and not less than 4″ on the roof, lapping the sheets 3″, mopping the full width under each with asphalt, or with pitch, if applied with roofs employing pitch.

A base flashing composed of J-M Asbestos Base Flashing Material shall be applied directly over and entirely covering the 15-lb. or 20-lb. roofing felt, cemented to it with the asphalt or pitch.

The base flashing shall be nailed, adjacent to its upper and end edges, with large head nails spaced on not to exceed 4″ centers driven into the brick joints or the nailing strip.

The edge of the base flashing on the roof shall be covered with a 4″ wide strip of 15-lb. Asbestos Felt, embedded in and coated over with asphalt or pitch.

The end joints shall be covered with Asbestile, as specified under "Cap Flashing." (*See opposite page.*)

On skylight curbs, etc., the flashing shall extend the full height, and turn over on top the full width, of the curb.

If no nailing facilities have been provided for securing the upper edge of the base flashing, a five-course cap and base flashing will be acceptable, constructed of alternating layers of Asbestile and 15-lb. Asbestos Felt. Such flashing shall be applied in a manner similar to that specified later for the application of cap flashing to full height of wall, repeating the operations described to provide three layers of Asbestile and two layers of felt. Such flashing shall extend on the vertical surfaces and on the roof the same distance as specified for the flashing method it displaces.

SPECIFICATION FOR BASE FLASHING WITH RAGGLE BLOCK

The groove in the raggle block shall be coated with J-M Concrete Primer and allowed to dry.

One thickness of the 15-lb. or 20-lb. roofing felt shall be applied to extend not less than 4″ on the roof, to cover the cant entirely, and to extend to the full depth of the groove in the raggle block. This felt shall be embedded in asphalt, (or, if applied with roofs employing pitch, either such pitch or asphalt may be used) on the roof and cant, and in a layer of J-M Ready-mixed Asbestile, approximately 1/8″ thick, in the groove in the raggle block.

One thickness of J-M Asbestos Base Flashing Material shall be applied directly over and entirely covering the 15-lb. or 20-lb. felt and similarly cemented to it with the asphalt or pitch and the Asbestile. The base flashing shall be nailed adjacent to the groove, into the joints between raggle blocks. At all joints of the base flashing material, and at 12″ centers between, wood wedges, primed and coated with Asbestile, shall be driven into the groove to prevent slippage of the flashing. Any remaining voids in the grooves shall be caulked with Asbestile and oakum. A layer of Asbestile, approximately 1/8″ thick, shall be troweled in place to extend not less than 3″ on the cant and 2″ on the face of the raggle block to cover entirely the groove in the raggle block.

A strip of the 15-lb. or 20-lb. felt not less than 4″ wide shall be embedded therein and a second layer of Asbestile, of the same thickness as the first, troweled over and finished to a feather edge and to a straight line at the upper and lower edges.

The edge of the base flashing on the roof shall be covered with a 4″ wide strip of the 15-lb. felt embedded in and coated over with asphalt or pitch.

The end joints of the base flashing shall be covered with Asbestile as specified under "Cap Flashing."

CAP FLASHING SPECIFICATIONS

(See drawings below)

When J-M Flashing is specified to be not less than 8 ins. high or when sheet metal cap flashing is to be used with J-M Flashing

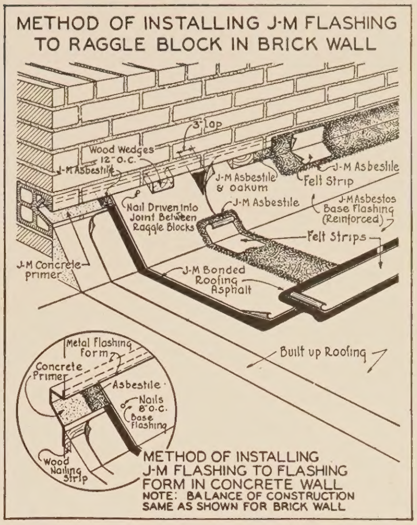
A layer of Asbestile, approximately 1/8″ thick and not less than 5″ wide, shall be troweled in place to cover the nail heads, the upper edge of the base flashing and the adjoining surface of the wall. A strip of 15-lb. Asphalt-saturated Asbestos Felt not less than 4″ wide shall be embedded therein and a second layer of Asbestile, of the same thickness as the first, troweled over and finished to a feather edge and to a straight line at the upper and lower edges. If a sheet metal cap flashing is specified, the Asbestile cap flashing shall extend to the point where such metal flashing protrudes from the wall.

End laps in base flashing shall be similarly covered.

When J-M Flashing is specified to extend full height of wall under coping to within 2 ins. of outside face

A layer of Asbestile, approximately 1/8″ thick, shall be troweled in place to cover the nail heads and the upper edge of the base flashing not less than 4″ and the entire inside face and top of the wall (under the coping) to within 2″ of the outside face. One thickness of 15-lb. Asphalt-saturated Asbestos Felt shall be embedded therein, with the sheets lapped 3″ and sealed with Asbestile, and a second layer of Asbestile, of the same thickness as the first, troweled over and finished to a feather edge and to a straight line at the lower edge.

METHOD OF INSTALLING J-M FLASHING TO RAGGLE BLOCK IN BRICK WALL



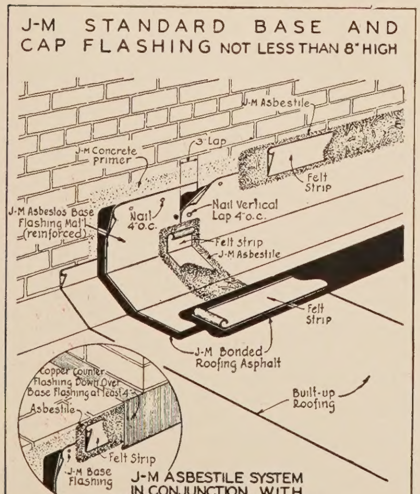
METHOD OF INSTALLING J-M FLASHING TO FLASHING FORM IN CONCRETE WALL
NOTE: BALANCE OF CONSTRUCTION SAME AS SHOWN FOR BRICK WALL

When J-M Flashing is specified to be not less than 8 ins. high with cap flashing extended through wall

One ply J-M Type B Asphalt-saturated Fabric shall be applied to the temporary top of the wall, to extend from within 2″ of the outside face to the inside face and project so as to cover the base flashing not less than 4″. This fabric shall be cemented to the top of the wall with the asphalt or Asbestile. One ply of 15-lb. Asphalt-saturated Asbestos Felt shall be applied directly over and entirely covering the fabric, cemented to it, and coated over, with the asphalt or Asbestile. The projecting felts shall be temporarily covered for protection during the completion of the wall. After the wall has been completed and the roofing and base flashing installed, the temporary protection shall be removed and a layer of Asbestile, approximately 1/8″ thick, shall be troweled in place to cover the nail heads and the upper edge of the base flashing and the inside face of the wall to the underside of the projecting fabric and felt. The projecting fabric shall be embedded therein, over which shall be troweled a second layer of Asbestile, of the same thickness as the first, in which shall be embedded the projecting felt, over which shall be troweled a final layer of Asbestile of the same thickness as the preceding layers, finished to a feather edge and to a straight line at the lower edge and to the line of the projecting fabric and felt at the upper edge.

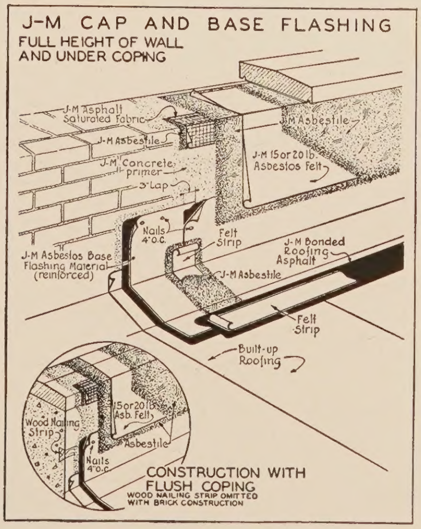
Details showing various methods of flashing

J-M STANDARD BASE AND CAP FLASHING NOT LESS THAN 8″ HIGH


J-M Asbestile
3″ Lap
J-M Concrete primer
Felt Strip
J-M Asbestos Base Flashing Mat'l (reinforced)
Nail 4″ o.c.
Nail Vertical Lap 4″ o.c.
Felt strip
J-M Asbestile
Felt Strip
J-M Bonded Roofing Asphalt
Built-up Roofing
Copper Counter Flashing Down Over Base Flashing at least 4″
Asbestile
Felt Strip
J-M Base Flashing

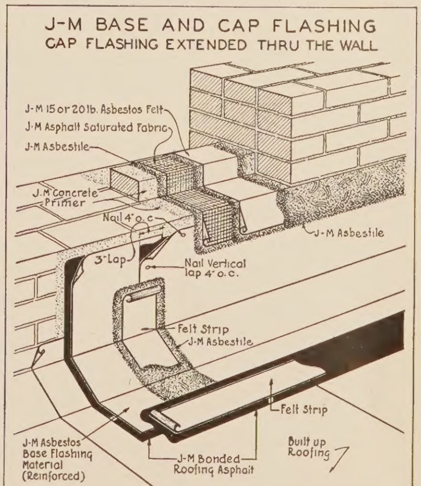
J-M ASBESTILE SYSTEM IN CONJUNCTION WITH COPPER COUNTER-FLASHING

J-M CAP AND BASE FLASHING
FULL HEIGHT OF WALL AND UNDER COPING



CONSTRUCTION WITH FLUSH COPING
WOOD NAILING STRIP OMITTED WITH BRICK CONSTRUCTION

J-M BASE AND CAP FLASHING
CAP FLASHING EXTENDED THRU THE WALL


J-M 15 or 20 lb. Asbestos Felt
J-M Asphalt Saturated Fabric
J-M Asbestile
J-M Concrete Primer
Nail 4″ o.c.
J-M Asbestile
3″ Lap
Nail Vertical lap 4″ o.c.
Felt Strip
J-M Asbestile
Felt Strip
J-M Asbestos Base Flashing Material (Reinforced)
J-M Bonded Roofing Asphalt
Built up Roofing

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